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EDINBURGH

MEDICAL JOURNAL.

VOL. XLI.—PART II.

JANUARY TO JUNE 1896.

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EDINBURGH:
OLIVER AND BOYD, TWEEDDALE COURT.
LONDON: SIMPKIN, MARSHALL, HAMILTON, KENT, AND CO., LIMITED.

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Part First.

ORIGINAL COMMUNICATIONS.

I.—VALEDICTORY ADDRESS.

By A. H. Freeland Barbour, M.D., F.R.C.P. Ed.

(*Read before the Obstetrical Society of Edinburgh*, 13*th November* 1895.)

In a valedictory address we instinctively look round and back,—round on the company who are with us, to note who have fallen out on the march, and back over the ground traversed during the past two years.

From our Society's ranks we miss the striking face of Thomas Keith, a pioneer in Ovariotomy. It is difficult for us to realize to-day, when the operation is done with safety and by every one, what his work was who did it while success was doubtful, and in the face of a hostile prejudice, but who continued on his way in the confidence that he would yet place it on a basis above criticism. It would take the knowledge of one who had lived through that time, and an abler pen than mine, to write an encomium worthy of Thomas Keith; I content myself with calling him a pioneer, a man who dares to go where no one has gone before, to do what no one has done before. The indomitableness of the Arctic explorer rouses our enthusiasm not more than that of men like Clay, and Wells, and Keith, who, undaunted by the fogs of ignorance, or the chill wind of criticism, or an ice-bound conservatism, broke through all and won the goal. But Keith had other gifts than that of indomitableness, which marks the pioneer. It was the blending of this quality with a womanly consideration for the wellbeing of his patients which made him a strong man. To appreciate this last characteristic, one has only to turn from the record of Keith's work in Operative Gynecology to that of those who do not give the ultimate wellbeing of the patient as prominent a place in operative methods as the mere success of the operation or even brilliancy of technique. The operations which Keith did *not* do are as great a testimony of his strength of character as the operations which he did.

Operative Gynecology has made an enormous stride since Clay, and Spencer Wells, and Keith made the removal of ovarian tumours a safe and simple operation. Then, attention was directed to conditions endangering life; now it is to those affecting wellbeing. Operations are being done every day for conditions which are only exceptionally fatal, but which either interfere directly with the pursuit of the patient's avocation, or make actual living a burden. This is a great step forwards, but with it the criterion of the operation necessarily shifts. The test as to the justifiability of operating is no longer merely the mortality of the operation, but its ultimate effect on the wellbeing of the patient. In the records of abdominal section we can no longer be satisfied with a long list of recoveries, by which is only meant recovery from the operation, but require such entries as 'cured' or 'permanently benefited,'—which, it is needless to say, can often only be made a few years after the operation has been done. Further, the grouping of all abdominal sections together belongs to the days when the fact that the peritoneal cavity was opened into was considered the peculiar and dangerous feature in the operation. Now there is no more reason for grouping together abdominal sections as such, than for putting together an amputation of the toe and amputation of the thigh because they are both operations on the leg. To do this will manifestly diminish the value of any statistics as to mortality. So far as it is possible, it would be well to divide abdominal sections into two groups:—1. For conditions affecting life; 2, for conditions affecting health,—the criterion for the first to be recovery from the operation; of the second, restoration to health. Until such a distinction is drawn it will be impossible to pronounce as to the validity of many of the operations now being done. In our hospitals we have now systematic registration of mortality; might it not be possible to have registration as to cure—that is, in all cases of operation for chronic invalidism (and this is called for not only in the case of abdominal section, but all forms of surgical interference), to have the patient reporting herself or himself, from time to time, until such a period has elapsed that a positive statement as to cure or the reverse could be made. This is done occasionally, when we have cases shown some time after operations; but unfortunately it is only the successful cases that present themselves. A morbid delicacy makes those patients who are not so well keep in the background.

From the roll of our Corresponding Fellows we miss the name of William Leishman, whose well-known *System of Midwifery* has won for him an honoured place in Scottish midwifery. His students delighted to speak of him as an ideal teacher; and for intimate acquaintance with the literature of all the schools, English and foreign, and lucid exposition, his text-book at once took a high place. He was engaged in preparing the fifth edition of it at the time of his death. His most important contribution to midwifery was his book on the *Mechanism of Parturition.*

Of distinguished foreigners among our Honorary Fellows, mention must be made of William Goodell, who was for twenty years Professor of Gynecology in Philadelphia. His *Lessons in Gynecology* was a very popular work in America, and ran through three editions, the vigorous, crisp style and piquant expression making it an eminently readable book.

Among our Ordinary Fellows we shall miss the familiar face of Dr T. A. G. Balfour, one of a family well known both in the Church and Medicine, and who was for forty years a member of our Society; and especially Dr David Wilson, whose name has been on our roll for half a century, and whom our Society honoured by making him one of its Presidents. Though he has not contributed largely to our Transactions, the address which he delivered from this chair showed the grasp which he had of the subject of Obstetrics, an address which Dr Keiller characterized as "excelling in its exhaustiveness all previous communications which he had heard from this chair."

Passing now to the ground covered by our Society's work during the past two years, we note that of forty-five papers read, seventeen dealt with Obstetrical and nineteen with Gynecological subjects, eight with Pediatrics, while one covered all the three.

The Obstetrical papers took up such questions as the composition of the blood in pregnancy and of the liquor amnii, chorea gravidarum, the sacculated pregnant uterus, prolapse of the bladder, and brain lesions with symptoms simulating hysteria in pregnancy. In Normal Labour our attention was directed to sectional anatomy, the position of the fundus uteri determined clinically, and the third stage; while in its pathology such topics were taken up as contraction of the vagina, exomphalos of the fœtus, and the value of Champetier de Ribes's bag, and of Walcher's position.

The Gynecological papers dealt with the classification of the diseases of women, utero-sacral cellulitis, twisting of the pedicle in ovarian tumours, dilatation of the bladder with blood-clot simulating pregnancy, cases of vesico-rectal and vesico-vaginal fistula, and the examination of the bladder by Kelly's method. Under Gynecological Therapeutics we might place such topics as electricity, the organic extracts, quinine, and the effect of removal of the ovaries on metabolism. Operative Gynecology was represented by papers on extra-uterine gestation, hysterectomy for fibroids in pregnancy, and ovariotomy in cases of twisted pedicle.

In Pediatrics there were papers on ante-natal pathology in the Hippocratic writings, the fœtus amorphus anideus and mylacephalus, the resuscitation of the asphyxiated child, rigor mortis in the new-born, the promontory mark, and operation for depressed cranial bones.

I purposely refrain from burdening this list with authors' names, but you will allow me to say how much we appreciate papers from our foreign Corresponding Fellows, such as Professor Curatulo of Rome and Dr Coromilas of Calamata.

Of this varied list of topics the freshest was that dealing with the composition of the maternal and fœtal blood, and papers on such physiological questions will always be heartily welcomed. As a model of a statistical paper on a clinical subject I might cite that on chorea. In the domain of Therapeutics the use of organic extracts opens up a new field of inquiry, and as a kindred topic we might place the effect on metabolism produced by the removal of the ovaries. The mode of action of the interpolar current in electrical treatment is a third subject which we have had before us, with regard to which we have had to confess our ignorance. Much of our treatment is necessarily empirical, although the mind is never satisfied until a reason can be given. Tarnier had established the value of corrosive sublimate in obstetric practice before its value as a germicide had been demonstrated, but without that demonstration it would not have received the world-wide acceptance it enjoys to-day.

In Operative Gynecology there has been nothing new recorded, although the papers on extra-uterine gestation showed that a good deal has yet to be done in laying down the best lines of treatment for this condition.

The value of our Transactions to the practical man would be enhanced if we had more papers like that on utero-sacral cellulitis, dealing with subjects which are of first importance on account of their very commonness. Amongst the various lectures in clinical medicine to which one listened as a student, a series which Sir Douglas Maclagan delivered on Phthisis are the only ones that stand out now. Others dealing with rare and curious affections were speedily forgotten, because a case of the same nature has never occurred again in one's experience to revive the impression made. I only give this as an illustration of what might with profit guide us in choosing topics for papers. The function of a Society like ours is not to teach in the sense in which students are taught; but it might do useful work in occasionally discussing commonplace subjects from the point of view of the man engaged in practice.

As examples of unremitting industry the papers on fœtal teratology are beyond all praise.

Perhaps the most interesting contributions to our Transactions have been the two discussions at our summer meetings. They were on subjects of great practical moment, and were enriched by the experience of those members of our Society who are engaged in country practice. It is a shock to the graduate on going into practice to find that a great deal of what he has been taught in hospital as desirable is not possible in practice. His opportunities of going into his cases are circumscribed, and his treatment is limited by the want of hospital resources in a private house. A Society like ours holds the balance, for on the one hand you have hospital teachers laying down a counsel of perfection, and on the other the man engaged in country practice stating what he believes to be practicable,—the attainable ideal lying somewhere between the two.

The discussion on Antiseptics in Midwifery brought out this fact, that the use of a vaginal douche in the puerperium does not necessarily form a part of the antiseptic management of normal labour.

The mention of antiseptics in midwifery compels me, at the risk of being accused of wandering from my subject, to turn aside to pay a tribute to the memory of Pasteur. No two things seem at first sight to be more unrelated than the discovery of the lactic acid ferment and the diminished mortality of women in childbed. Nevertheless, the one is connected with the other. Link by link one can follow the chain from the discovery of the lactic acid ferment, through the discovery of the germs of septicæmia in puerperal fever by Coze and Feltz, and the consequent application of the germ theory to its causation, up to the placing of antiseptic midwifery on a solid scientific basis. The obstetrician, alike with the physician and surgeon, would place a wreath on the tomb of the beneficent Pasteur.

While the discussion on Antiseptics ended in a unanimous finding, the Registration of Midwives opened up a much-vexed question on which the last word will not be spoken for some time to come. As to the dangers to women in childbirth from incompetent midwives there is agreement; but whether the remedy lies in the registration of midwives is still *sub lite.* Fortunately, we in Scotland are not called on to make up our minds at this stage, but may have the opportunity of watching the experiment tried in England, which asks for home rule on this point. One practical result of the discussion in our Society was to elicit the fact that we do not feel the need of legislative interference at present, and we can therefore watch the experiment without any bias.

There are certain considerations worth bearing in mind when we consider this question. Registration of midwives is not analogous to registration of medical practitioners, except in so far as examinations have a reflex effect on the course of training. Registration in the medical profession derives its strength from the public opinion within the profession as regards who should be on the register. Further, the court that sits in judgment on doubtful cases is one of the learned corporations that embody that opinion. Registration is simply the outward expression of an existing opinion. Among midwives as a class there exists no such opinion, and the application of registration to them, or rather the working out of it, will be more of a police system imposed from without. Further, the body which is to sit in judgment on the removal of individuals from the register does not exist, and its constitution is involved in difficulty. There is also a danger of registration being a dead letter, because there is no one to move in cases of *malpraxis.* The medical profession will never take up the odium of informing against midwives, and it remains to be seen who are the parties who will move in cases of *malpraxis,* short of the cases that are so flagrant as to bring the midwife within range of criminal procedure, for which we have already the necessary legal machinery without any Registration Act.

As regards a system of examination as a test for admission to the register, the difficulties which exist with regard to this in the registration of medical practitioners should give us pause. The pressure that can be brought to bear on Examining Boards is largely moral,—its strength lies in medical opinion rather than in the Medical Act. And I believe that if a Midwives Act was passed, we should be at once in the face of similar difficulties, and in a more pronounced form.

A great argument for the registration of midwives was removed when women were admitted to the medical profession. Among other justifications of this step was the feeling which exists in some quarters that women should be attended by women. Now, however, that women have an equal position with men on the register, I think it savours of a retrograde step to reinstate the ancient order of midwives. Any movement to educate the midwife more thoroughly we should heartily welcome, as the present course of training is inadequate. The present legislative proposals, however, make no reference at all to this question ; and even with such a more extended course, her position must always be subordinated, as it is subordinate, to that of the fully-trained practitioner, and her work done under his direction. Cases where this is impossible must be treated as exceptional.

In connexion with the summer meetings an attempt has been made to revive the social element in our Society's life ; and at our dinner last July we celebrated the semi-jubilee of one who has thrice occupied our Presidential Chair, and who has done much to further the interests of our Society—and in no way more than this, in his remarkable power of setting other men to work. One has but to glance over our Society's Transactions for the last fifteen years to see how much he has enriched them by his own pen, and still more how he has multiplied himself in the work of the five men who are always proud to talk of him as "their chief."

Our Society now enters on its fifty-sixth year; and while its record is good, it must be confessed that it is not proportionate to the amount of work that it should turn out, when we take into account its membership, its opportunities, and the encouragement given to research. Nor is the quality of the work done altogether what it should be. Any feeling of pride we may have on glancing over our Transactions is rebuked when we pick up the *Archiv für Gynäkologie* or the *Zeitschrift für Geburtshülfe*. We have not been able as yet to compete with the Germans in laboratory work, because our graduates have not the means, the material, nor the time. The difficulty as to means has been got over by the establishing of the Laboratory of the Royal College of Physicians; and our Society gradually acknowledges the enterprise of the College of Physicians in founding this institution, and wishes it all success in its efforts to provide still better accommodation for its workers. The scanty material for laboratory work will always handicap us in a small centre like Edinburgh. Nothing strikes one more in visiting one of the large German centres like Berlin, than the enormous wealth of material in their large hospitals and pathological departments. The lack of time is also a difficulty, as most are compelled on graduation to plunge at once into practice. Yet even here in some cases there is a reach of back-water in waiting for practice, which is an invaluable opportunity for original work. And even in the rush of practice there should always be time to observe and systematize the results of observation. Our best papers have been written by busy men.

There are three kinds of work that might be done, all equally valuable,—literary, laboratory, and clinical. Those whose interests lie in reading can render a great service by collecting all that has been written worth reading, systematizing and digesting it. So much literature is now pouring in on all sides that a new department of work has arisen in connexion with it. The literature heap grows so rapidly, and contains so much rubbish concealing the gems, that original research with regard to it is becoming a necessity. We owe an infinite debt to the man who can say, I have gone through it all, and this is the net result. Here, of course, thoroughness is a necessity. To use abstracts, or mere references to papers, or even to be content with reading the summary which the writer gives at the end of his paper, takes away from the peculiar value of this kind of work. The stamp of original research here is that it deals with the original. Distinct from this, though connected with it, is critical work, calling into use a different faculty, which all are not gifted with. But where it is present the best work may be done during the period I have spoken of. A new eye sees fresh lights, and the student mind after it has passed through its course of training and finds itself free to criticize facts and theories, may do work at this time for which it loses the opportunity, if not also the capacity, after it has been in contact with practical life.

Laboratory work can only be done by a few, and the possibility for it depends on the position in which a man finds himself after graduation. Its results have formed a distinct feature in our Transactions in recent years, and will, we hope, more and more continue to do so.

The great desideratum in our Transactions is, however, good clinical papers. The absence of these not only makes our Transactions less digestible, but lowers the nutritional value in the eyes of the practical man. "Too many raisins and too little suet for my taste," he says,—the remedy for which, of course, is not to lessen the former, but to increase the latter.

There is an enormous wealth of clinical experience being acquired by the Fellows of our Society engaged in practice up and down the country, which is lost. It is in solution, but requires precipitation to make it visible and permanent; and our Society should be the thread round which crystallization takes place. What deters most men from contributing is the thought that their molecule is not worthy of consideration, while it really forms an essential part of the solution.

Along whichever line we prefer to work let us produce something. The mountain chain of coral which rises from the still depths of the Pacific, skirting the coast of Australia for over a thousand miles as the great barrier reef, is the work of a living fringe of coral polyps, each of which during its lifetime secretes a few grains of lime from the sea, and adds it to the pile. We build to-day on the work of generations of unknown workers who have passed away. Before us lies truth, wide and deep as the sea. It is ours to gather a few grains and add them as our contribution to the barrier reef of science.

In retiring from this Chair, I have to thank you for the great honour you conferred on me in asking me to occupy it. Edinburgh has always held an honoured place in Midwifery and Diseases of Women, and round our Society have grown up the traditions which have made that name famous. Conscious of the responsibilities attached to this Chair, and of great deficiencies in their discharge, I gladly withdraw from it; and all the more so, because I have to welcome Dr Ballantyne of Dalkeith, who joined our Society five and twenty years ago in company with one of our former Presidents, Dr Halliday Croom, and our indefatigable treasurer, Dr Craig, whose satisfactory balance-sheet continues to be one of the features of our Society's progress. From his long connexion with our Society, and his extensive clinical experience, there can be but one opinion as to our new President, and in your name I heartily welcome him to the Presidential Chair.

II.—TERATOGENESIS: AN INQUIRY INTO THE CAUSES OF MONSTROSITIES.

By J. W. Ballantyne, M.D., F.R.C.P.E., F.R.S.E.

(*Read before the Edinburgh Obstetrical Society, November* 13, 1895.)

Introduction.

From the earliest times attempts have been made to explain the occurrence of teratological phenomena. Many have been the theories advanced, and great has been the difference of opinion they have evoked; but it may be truly said that till within the last half-century little real progress had been made in this field of study. During the last few years, however, an immense amount of light has been thrown upon this obscure subject, and science now possesses a vastly wider and more accurate knowledge of the causes which lead to the production of monstrosities and of the manner in which they act. Since much of the work that has been instrumental in bringing about this improved condition of matters has been little, if at all, referred to in current medical literature; since, also, the practical bearings of several of the discoveries that have been made are very evident and of great importance, it has seemed to me desirable and opportune to pass in review the teratogenic theories that have been from time to time advanced, and to indicate the lines along which recent research has been working and the results which have been thus obtained.

Some of the views held by the ancients regarding the cause of monstrous births have long since been abandoned, and are now to be met with only amongst savage races; others are still accepted by the popular mind, but rejected by the scientific; and yet others have found a certain degree of justification in the results of the clinical and pathological investigations of the present age. But in addition to the ideas handed down to us as a heritage from past times there are those which have been brought into being or confirmed in existence by that powerful agent of modern scientific research, experiment. The artificial production of monstrosities or experimental teratogeny has done more than any other method of investigation to explain in a rational way the causes of teratological formations and the manner in which they act, whilst it has also clearly demonstrated that teratology is not an isolated subject of little interest save to the curious, but an integral and important part of pathology, with practical bearings upon many of the problems of medicine and surgery.

In the following pages the attempt will be made to trace the history of the various teratogenic theories which have been handed down to us from early ages, or have sprung up within more recent times. The light which experimental teratogeny has thrown upon these theories will be also referred to, and thereafter the way in which teratogenic causes act will be discussed. I hope thus to be able to show how order has in a large degree been evolved from chaos, and an apparently unprofitable subject converted into a certainly fertile field of research.

It may be well here to indicate the scope of the inquiry and the order in which the various points will be considered. This is done in the following table :—

I.—Causes of Monstrosities.

A. Theories of the Past.
- 1. Supernatural Causes.
- 2. Physical Causes.
- 3. Mental Influence.

B. Theories of the Present.
- 1. Mechanical Causes.
- 2. Diseases of—(*a.*) Fœtus ; (*b.*) Fœtal Annexa.
- 3. Embryological and Germinal States.
  - (*a.*) Heredity and Atavism.
  - (*b.*) Environment.
  - (*c.*) Germ Infection.

II.—Mode of Action of the Causes.

1. The light which experimental teratogeny throws upon the mode of action of the causes of monstrosities.

2. Teratogenic processes.

I.—CAUSES OF MONSTROSITIES.

A. Theories of the Past.

1. *The Supernatural.*

In the early ages of the world's history it was customary to ascribe all unusual phenomena of Nature—earthquakes, comets, eclipses, and the like—to supernatural causes. Abundant evidence of this is to be found in the literature and legends of the past, and in the customs and beliefs of savage or primitive peoples existing at the present time. Amongst the unusual phenomena of Nature malformations and monstrosities of the human fœtus or of the young of the lower animals could scarcely fail to find a place, and so it happens that in the earliest records of teratology are to be found hints, and even proofs, that such occurrences were regarded as due to supernatural agencies. In different parts of the world, and in the same part but at different times, opinions differed as to the nature of the supernatural teratogenic cause and the meaning of the teratological phenomenon. Some peoples ascribed monstrous births to the gods they worshipped ; other races, who had divided their pantheon into good and evil deities, put the blame sometimes upon the former and sometimes upon the latter ; whilst yet others connected teratological states with the position and mode of combination of the stars and other heavenly bodies.

Polytheism was succeeded, in certain countries, by monotheism, yet the same ideas lived on, naturally altered in some degree to suit the newer conceptions of the supernatural. To the God of the Jew and the Christian, to the Satan of the Old Testament and the evil spirits of the New, and to the stars in the midnight sky, men still looked as the causes, directly or indirectly, of the deformities with which an infant might come into the world.

The meaning, also, of the teratological phenomenon was variously conceived. The gods were amusing themselves, said some; they were exhibiting the extent of their creative powers, said others; they were angry with men, they were warning mankind, or they were chastising individuals or countries, were the views of yet others. From such beliefs the idea soon gained ground that monstrosities were portents of events in the future, that they foretold good sometimes, but more commonly evil fortune. The Chaldeans read in the starry heavens the secrets of the future, and rapidly learned to transfer to the monstrous infant born under this or that astral combination the meaning of the stellar message; and so in ancient Babylonia the birth of a babe of doubtful sex meant an approaching calamity to the land, whilst the appearance of one with an imperforate anus proclaimed a famine. Similar astrological beliefs were in vogue in Europe in the Middle Ages; but they did not reign alone, for a transference of teratogenic powers had taken place from the deity to the devil, and to the malign influence of the tempter and his emissaries—the mediæval succubi and incubi — were ascribed monstrous and malformed births. Happy was the mother of a deformed infant when she was able to show a preponderating amount of evidence in favour of the stellar origin of her abnormal progeny; otherwise a death at the stake awaited her and her "devil's brat."

Such were the various aspects in which the supernatural was invoked to explain the origin of malformed fœtuses, and it is necessary now to give some illustrations of the different phases of this ancient belief. These illustrative instances may be considered in three groups,—*first*, those which exemplify a belief in the deity as a teratogenic cause; *second*, those which ascribe this power to the evil one; and *third*, those in which astrology is regarded as the potent factor.

(1.) Abundant instances are forthcoming to show a widespread belief in the Divine power as the cause of monstrosities, and the following examples are cited to illustrate the various explanations given of the meaning of the exercise of this power.

It is possible that in the earliest ages of the world's history monstrous infants were regarded as divine, and worshipped. They might be the gods themselves or their progeny, or they might simply be simulacra of the deity. On this hypothesis it is easy to account for the teratological appearance of nearly all the heathen gods and goddesses. Of course, many of them are unlike the cases of monstrosity met with at the present time, but then it must be remembered that facts handed down by oral tradition from distant times, and through the agency of men unacquainted with anatomical details, must inevitably become distorted. Doubtless the artificer of the idol was seldom, if ever, an eye-witness of the appearances of the deformed infant, and was consequently compelled to draw upon his imagination in order to eke out the scanty data handed down to him to work with. At the same time, in the two-headed, many-breasted gods of the East, in the achondroplasiac god Pthah of the Egyptians, in the cyclops of the Greeks, and in the fauns and satyrs of the Romans, are to be recognised monstrosities and malformations which are well known at the present day. Indeed, the one-eyed fœtus has been named cyclopic from its resemblance to the cyclopes of ancient times; and it is far from improbable that Polyphemus in his turn took his origin in the one-eyed fœtus of still earlier times. It is, therefore, a startling but not an unlikely conclusion to come to, that teratological specimens served to supply the races of mankind with many of the deities which they ignorantly worshipped.

To take up another line of thought, the gods were the creators of monstrous infants, and their purpose was amusement. *Ζεὺς παίζει*, Jupiter is playing, said Heraclitus; and Pliny (*Nat. Hist.*, lib. vii. c. 2) only slightly altered the idea when he wrote that Nature creates monsters for the purpose of astonishing us and amusing herself (Ludibria sibi, miracula nobis ingeniosa fecit natura).[1] Traces of this old belief are to be found at the present day in our use of the word "*Sport*" in Botany, and in the German "*Spielart*" and "*Naturspiel*," the French "*jeu de la nature*," and the Latin "*lusus naturæ*" as synonyms of monstrosity. A somewhat similar idea is conveyed by the expression "*freak of nature*."

Soon, however, the notion of the sportive, pleasure-seeking deities turning out monstrosities very much like children making mud-pies gave place to another and a graver conception. The gods were still the cause, but now their purpose was to warn, admonish, or threaten mankind. The belief in the monitory or minatory meaning of teratological occurrences took a firm hold on the minds of men, and the introduction of Christianity only meant the transference to the one God of the power and purpose that had been previously ascribed to the many deities of the Greek and Roman pantheon. It may be that the word monster itself is derived from moneo, I warn; but another origin has been suggested for it, to which reference will again be made. The birth of a deformed fœtus, then, was a Divine warning; it meant, further, that a deity must be propitiated, else some calamity would happen. From this belief to the sacrifice of the malformed infant is but a step, and thus doubtless arose one at least of the reasons why such monstrosities were, in Europe at any rate, almost invariably killed in the Early and Middle Ages. The Greeks of Sparta may have thrown their deformed infants into the abyss near Mount Taygetus in order to preserve the physical perfection of the race ; but in other countries the killing was sacrificial and propitiatory, and fortunate was the mother if she escaped her infant's fate. Julius Obsequens,[1] for instance, states that, in the year 120 B.C., "in foro Vessano androgynus natus in mare delatus est;" and again, in 92 B.C., "Androgynus Urbino natus, in mare deportatus." Lucan,[2] also, in his *Pharsalia* relates how Arnus, the chief of the Etruscan diviners, ordered the slaughter and burning of all monstrous infants at the time of the overthrow of the Roman Republic.

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[1] Holland (P.) in his *Translation* of Pliny (vol. i. p. 157, London, 1601) thus renders the passage, "See how Nature is disposed for the nones to devise full wittily in this and such like pastimes to play with mankind, thereby not onely to make her selfe merrie, but to set us a wondering at such strange miracles."

Gradually it would appear that the idea of the deity as the cause of the monstrosity became lost in the consideration of the calamity which the malformed fœtus was supposed to predict, portend, or presage. The supposed cause of the phenomenon was lost sight of in the supposed effect. In this way it is believed that the word *monstrum* originated, viz., from *monstro,* I declare or show ; and as Cicero[3] puts it, "Monstra, Ostenta, Portenta, Prodigia appellantur, quoniam monstrant, ostendunt, portendunt, prædicant."

Innumerable instances might be given of the pretended connexion between monstrous births and national or personal calamities and misfortunes ; the works of Lycosthenes and Obsequens are full of them, and long lists of them were found in cuneiform characters on the brick tablets of the Royal Library at Nineveh.[4] Sometimes, but rarely, the event predicted was of a fortunate nature, as when Cæsar's horse with feet showing digits was regarded as an indication that the world would one day belong to the emperor (*Suetonius*). Notwithstanding active opposition on the part of such writers as Licetus and Polydore Vergil, the idea that monstrous births predict disaster held its ground in Europe till the close of the seventeenth century.

There is a small amount of evidence to show that a malformed infant was sometimes regarded as a punishment of sins committed. In early French history we read that Robert II. (the Pious), who succeeded Hugues Capet, married near the close of the tenth century his cousin (in the fourth degree) Bertha, daughter of Conrad, King of Arles, and widow of Eudes I., Count of Blois. For this reason the royal pair were excommunicated by the Pope of Rome. The Queen gave birth to an infant having the head and neck of a goose (une tête et un col d'oie). Sismondi suggests that the monstrous infant was caused by the fright received by the Queen during her pregnancy from the Papal excommunication ;

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[1] *Julii Obsequentis Prodigiorum Liber*, pp. 86 and 103, Basileæ, 1552.

[2] Lucan, *Pharsalia*, lib. i. verse 589.

[3] Cicero, *De Divinatione*, lib. i. par. 42.

[4] Ballantyne, J. W., "Teratological Records of Chaldea," *Teratologia*, i. p. 127.

but Ségur,[1] in his *Histoire de France*, states that the birth of the monstrosity was a punishment from God ("un punition de Dieu"). Ségur, however, describes the deformity of the child as a condition resembling the feet and not the head of a goose; possibly, therefore, it was a case of webbing of the digits. This display of the vicarious teratogenetic powers of the Pope seems to have brought Robert the Pious to his knees; at any rate, Bertha was repudiated in 1006, and the King married the haughty Constance, daughter of the Count of Toulouse. Possibly the disciples of our Lord had some thought of the punitive nature of congenital malformations when they put the question concerning the man born blind,—"Master, who did sin, this man, or his parents, that he was born blind?" Christ's reply, whilst in no way supporting the punitive theory of origin of the congenital blindness, probably gave rise to the notion that monstrous births were for the purpose of revealing the glory of God. Paré,[2] in his treatise on monsters, enumerates thirteen causes of such productions, of which the first is to proclaim the glory of God.

Curiously enough, the belief in the Divine origin of terata appeared again near the close of the seventeenth century as one of the consequences of the doctrine of the pre-existence of germs advanced by Swammerdam and Malpighi.[3] If normal germs pre-exist, why not also monstrous germs? This, however, Swammerdam and Malebranche would not admit, for they recognised that to do so would be to confess that monstrous infants were the immediate work of the Creator. Régis, in his *Système de philosophie* (III., lib. viii. pt. 1, c. ix.), accepted this consequence, and explained that, whilst normal beings showed forth the infinite wisdom of the Creator, monstrosities demonstrated His infinite power. The question, thus raised, of the original character of malformations gave rise to heated discussions in the French Académie des Sciences, carried on by Lémery, Duverney, and Winslow, between the years 1706 and 1743; and Haller,[4] in his treatise, *De Monstris*, published as late as 1768, seems largely to have regarded monstrosities as the result of germs originally monstrous. The study of embryology, however, soon put an end to such imaginings.

(2.) It was inevitable that a belief in the teratogenic power of the deity should be followed sooner or later by the idea that this power was specially the possession of an *evil* or *malignant* spirit. According to certain of the older commentators, the events described in the first four verses of Genesis vi. refer to the cohabitation of apostate angels with the daughters of men, the consequence of which was the birth of giants ("monsters, prodigies," *Tuch, Knobel*); but this interpretation of the passage is not the one now generally accepted.

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[1] Quoted by E. Martin, *Histoire des Monstres*, p. 78, 1880.

[2] Paré (A.), *Works*, translated by T. Johnson, lib. xxv. c. 1, p. 585, London, 1678.—"There are reckoned up many causes of Monsters, the first whereof is the glory of God, that His immense power may be manifest to those which are ignorant of it, by the sending of those things which happen contrary to Nature."

[3] *Vide* Dareste (C.), *Production des Monstruosités*, 2nd edit., p. 13, 1891.

[4] Haller (A.), *Opera minora*, III. p. 133, 1768.

In northern Europe in early times the treatment of monstrous infants suggested a certain degree of belief in their diabolical origin. Du Chaillu, in his interesting work on the Vikings (*The Viking Age*, ii. p. 40), gives the following extract from an ancient legal enactment of the Norsemen:—"Every child which is born into this world shall be reared, baptized, and carried to the church; except that only which is born so deformed that the mother cannot give strength to it. . . . It shall be carried to a beach and buried where neither men nor cattle go; that is, the beach of the evil one."

From the early part of the Christian era up to the end of the seventeenth century the nations of Western Europe had opinions upon teratological subjects which reflected the beliefs and teaching of the early Fathers. To these men possession by devils was a real thing, and carnal connexion with demons was but an amplification of this belief. Deformed fœtuses were looked upon as the progeny of Satan, and to destroy them was to diminish his family. St Jerome and Thomas Aquinas were firm supporters of these doctrines. St Augustine and St Gregory seem to have had more enlightened views, but did not state them very strongly. At a time when "incubi" and "succubi" were given full credence to, it would have been strange indeed if the diabolic origin of monsters had not also been accepted. In the sorcery and witchcraft trials of the Middle Ages in France, Germany, and Britain are many signs of such beliefs. "Coitus cum diabolo" was a matter always inquired into, and in many cases torture wrung from the unfortunate accused confessions of the most revolting and terrible nature, as any one who chooses may read in Pitcairn's *Criminal Trials.* The Papal Bull of Innocent VIII. (A.D. 1484), which gave the full sanction of the Church to the persecution of sorcerers and witches, embodied the belief in Satanic dealings. It would be of no profit to go more fully into the history of this darkest fancy of these truly Dark Ages; but it may be mentioned that even Luther, writing in the next century after Pope Innocent's Bull, stated his belief in the possibility of little devils resulting from "coitus cum diabolo." A short reference may also be made, in passing, to the case reported by Hauppius (*Biblioth. port. pract.*, p. 454), and cited by E. Martin in his *Histoire des Monstres* (p. 50, Paris, 1880). It was that of a woman living in a town ruled over by Ladislaus of Berstein, who gave birth to a headless (anencephalic) fœtus with deformed limbs. The infant was buried without baptism; but when the mother came to hear of it she asked that it should be burned, giving as her reason the fact that she had received a visit from a hopgoblin incubus (un lutin incube). Ladislaus, hearing of the circumstances, ordered the exhumation of the fœtus; it was carried outside the town to be burned; but the flames would not attack it, says the old record, and it was only after it had been chopped up into small pieces by the hangman that it could be destroyed. A somewhat similar incident is related by Hector Boethius as happening in the county of Aberdeen in Scotland.

Paré, in his treatise *Des Monstres* (1783), admitted the active intervention of demons as a teratological factor, and as recently as 1893 a notice appeared in an Australian newspaper concerning the birth of a hirsute and otherwise deformed infant, supposed to be the result of incautious remarks about the evil one made by the mother in her pregnancy.[1] Mediæval beliefs have had a very firm hold on the popular mind, and the curious one in question has formed no exception to the rule. To enter into the subject of the supposed *modus operandi* of the Satanic or diabolic influence would be unprofitable.

(3.) The position, movements, and combinations of the heavenly bodies have entered largely into the formation of the opinions and beliefs of ancient races concerning the origin of terrestrial phenomena. The Chaldeans were, as is well known, past masters in the art of divination from all kinds of phenomena, stellar or terrestrial. That they connected together teratological and astrological occurrences is also beyond doubt. Lenormant,[2] in his work on Chaldean divination, explains in a very reasonable way how this belief grew. The passage may be rendered as follows:—"The development that their astrology had given to 'généthliaque,' or the art of horoscopes of births, had led them early to attribute great importance to all the teratological facts which were there produced. They claimed that an experience of 470,000 years of observations, all concordant, fully justified their system, and that in nothing was the influence of the stars marked in a more indubitable manner than in the fatal law which determined the destiny of each individual, according to the state of the sky at the moment when he came into the world. Cicero, by the very terms which he uses to refute the Chaldeans, shows that the result of these ideas was to consider all infirmities and monstrosities that new-born infants exhibited as the inevitable and irremediable consequence of the action of these astral positions. This being granted, the observation of similar monstrosities gave, as it were, a reflection of the state of the sky, on which depended all terrestrial things; consequently one might read in them the future with as much certainty as in the stars themselves."

Astrology and the casting of horoscopes survived by many centuries the fall of the Babylonian empire; indeed, the notion of stellar influence upon the fœtus lives still in the expression

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[1] *Vide Teratologia*, i. p. 59, 1894.

[2] Lenormant (F.), *La Divination et la science des présages chez les Chaldéens*, p. 103, Paris, 1875.

"born under a lucky star," and Zadkiel's Almanac is a solid fact. Ptolemæus Claudius,[1] an Alexandrian astrologer of the second century, not only stated the astral conditions under which terata were born, but also mentioned the nature of the malformation to be expected. The position of Venus or of the moon at the moment of conception had, according to the astrological doctrine, a potent effect in determining whether the infant was to be normal or deformed. It was also alleged that monstrous creations were more common in tropical lands on account of the position of Venus in respect to the zodiac.

It may be well here to refer to a tale which illustrates the opinions in vogue in the early part of the thirteenth century with regard to animal teratology and astral conditions. About the year 1200 a cow gave birth to a calf said to be half human (possibly an example of fœtal hydrocephalis in the calf). The shepherd was in consequence accused of an unnatural crime, and was condemned to be burned alive. Albertus Magnus,[2] however, saved the man's life by giving it as his opinion that the teratological phenomenon was due to a certain constellation.[3] In this writer's work, *De animalibus*, it is stated that a monstrosity may be due either to a fault in the material or to celestial influence; when certain heavenly bodies are found in certain places in the sky a man cannot be generated, and so a child is born with the head of a bull or a lamb. It is evident, therefore, that Albert applied the same ideas to human as to comparative teratology. Thomas Aquinas, a disciple of Albertus, accepted these theories, and even expounded them to some extent. Cardanus,[4] a prolific writer of the sixteenth century (*b.* 1501, *d.* 1576) notable for the extraordinary mixture of sagacity and foolishness in his works, moulded his beliefs upon those of Ptolemæus Claudius already referred to; he even supplied his readers with the representation of the constellation under which a double monster was born. Septalius[5] looked to the stars for the explanation of moles and nævi seen on the fœtus; and even T. Bartholin[6] believed in the potency of stellar influences on the unborn infant.

In a work entitled *Grande Encyclopédie universelle,* by Henricus

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[1] *Tetrabiblon*, lib. iii. c. viii. (*De monstris*). *Vide* Taruffi, *Storia della Teratologia*, iv. p. 18, 1886.

[2] Albert the Great was a most voluminous writer upon a vast number of different subjects, including theology, medicine, astronomy, metaphysics, etc. He was born in 1193 or 1205.

[3] Albertus Magnus, *De somno et vigilia.* Opera omnia, v. p. 64, Lugduni, 1651. Albertus Magnus, *De animalibus*, lib. xviii. cap. vi. tract 1, Venetiis, 1495.

[4] Cardanus (J.), Commentarium in Ptolemæum de astrorum indiciis, lib. iii., cap. viii, *Opera omnia*, v. Lyon, 1663.

[5] Septalius (L.), *Libr. de nævis.* Mediolani, 1606.

[6] Bartholin (T.), *De cometâ consilium medicum, monstrorum nuper in Dania natorum historia.* Copenhagen, 1665.

Asteldius, and published about the beginning of the seventeenth century, it is stated that a Danish astronomer, who was also a medical man, had discovered the origin of monstrosities. He ascribed them to comets, and regarded them as tumours scattered throughout the firmament, which when they were precipitated upon the earth, took on there all kinds of unusual and extraordinary forms (E. Martin).

In the work by Aldrovandus (*De monstrorum historia*, p. 391, Bononiæ, 1642), edited by Ambrosinus, credence is given to the foregoing beliefs; at any rate, the views are stated and their adherents named. Ambrose Paré,[1] however, is openly sceptical, and says: "Yet astrologers (lest there should seem to be any thing which they are ignorant of) refer the causes of these (*i.e.* monsters) to certain constellations and aspects of the planets and stars." Licetus[2] altogether omitted the stars from his list of teratological causes, and so the theory died out, at any rate among scientists. A trace of the old belief in what may be called the teratogenic power of the heavenly bodies is preserved in the word "moon-calf," which Webster (*Dictionary of the English Language*) defines as (1) a monster, false conception; (2) a mole, or mass of fleshy matter generated in the uterus; (3) a dolt, a stupid fellow. Ogilvie (*Imperial Dictionary*, iii., N. Ed., 1882) gives to the word the same three meanings, and adds that it is comparable to the German "mond-kalb," a person or conception influenced by the moon. In a discussion in *Notes and Queries* (Eighth Series, iv. pp. 288, 432, and 475, 1893) upon the meaning of moon-blasting in connexion with the "churching of women" in the Episcopal service, it is stated by E. S. A. that "moon-blasting," as applied to women with child, had to do with the belief that the beams of the moon might cause an abortion known as a moon-calf. Most writers trace this belief back to Pliny; but this author uses only the word "mole." It is to one of his translators (Holland) that we owe the introduction of the term "moon-calfe" into the *Natural History*. Caliban, in Shakespeare's *Tempest*, is frequently referred to as a "moon-calf" or "monster." The names water-calves and moon-calves[3] (Wasser-kälber and Mondskälber) have been given to cases of fœtal dropsy in the lower animals, as L. Frank[4] tells us in his paper on a calf with general anasarca. It is probable, however, that "calf" in "moon-calf" does not mean the young of the cow, but a thick fleshy substance like the calf of the leg. Whatever may be the origin of the word, it certainly suggests a belief in lunar influence upon the fœtus.

Such were the theories of the supernatural which our ancestors used to explain the occurrence of teratological phenomena, and whilst their very enumeration brings a smile to the face of the modern scientist, their existence was a very real thing to the people of the Middle Ages,—so real that death itself, and that of the cruellest kind, might be the fate of the unfortunate mother of a deformed infant. It must not be forgotten, also, that even at the present day traces of these early superstitions are to be found not only amongst savage races, but also in our own land and in the popular mind.

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[1] Paré (A.), the Works of that famous Chirurgeon, Ambrose Parey. Trans. by Th. Johnson, p. 601, London, 1678.

[2] Licetus (F.), *De Monstris*, lib. i., cap. 6, Patavii, 1668.

[3] Ballantyne (J. W.), *Diseases of the Fœtus*, i. p. 220, 1892.

[4] Franck (L.), Zur Kenntniss der sogenannten Wasserkalber, *Deutsche Zeitscrift für Thiermedicin*, v. p. 82, 1879.

III.—NOTES ON A CASE OF TYPHOID FEVER WITH UNUSUAL SEQUELÆ.

By J. Christian Simpson, M.B.

The following are brief notes of a case of typhoid fever which was the exciting cause of an hystero-cataleptic condition and other nervous symptoms.

Ellen T., aged 45, has been the subject of attacks of unconsciousness, accompanied by spasticity of the lower limbs and some of the trunk muscles, while at the same time there is a plastic condition of the muscles of the upper extremities. This condition has been constantly recurring since she had an attack of typhoid fever at the age of 28.

Family History.—Father died of asthma, aged 64; mother of paralysis, aged 60. One sister slightly paralysed since childhood, died suddenly; other relations healthy, with the exception of a nephew, who has slight "petit mal" and nocturnal enuresis.

Personal History.—She had the usual children's diseases, but was strong and occupied as a servant when she contracted typhoid fever. During the convalescent stage, she suddenly became unconscious, without any scream or aura; face was pale, and did not become livid, limbs stiff and rigid, and did not pass through a clonic stage before resolution. There were sometimes five such seizures in the day; the tongue was sometimes bitten, but there was no foaming at the mouth, nor embarrassed respiration. The attacks were worst during the night, but involuntary micturition only occurred during the day time. The amount and character of the urine were never noted. She was dazed and stupid for a time after each fit, but not always so at first. The first seizure was on a Sunday, and this day has continued to be the worst day for fits ever since. The true cataleptic condition gradually became more marked; she never was in an actual trance, though sometimes in a state similar to the "status epilepticus." There never was opisthotonos, and the fits were always worse when attention was paid to her, or if a stranger were present. She was confined to bed for nine years in this helpless state, and during four months in the year 1882 there was retention of urine, which was daily relieved by her then doctor; this phase of the illness has never returned. At the end of nine years she began to get up for a short time, and sat by the fire; but regularly every Sunday she was confined to bed by a constant recurrence of the fits. At intervals severe attacks of vomiting have occurred, and she sometimes could retain no food for two or three days at a time.

State on Examination in 1889.—Pale, spare woman, with some cicatrices on her face; manner nervous, but able to walk and do a little house-work. If seen in bed, she would suddenly, while speaking, pass into an unconscious state, with muscular rigidity of the lower limbs and head; there was no scream, no clonic spasm at any time; respiration and heart's action quiet and calm; face pale; no involuntary passage of urine or fæces. The rigidity of the body as a whole was so great that she could be raised on her head by lifting one foot. The cataleptic condition is not so marked as formerly, but is still present in the upper limbs, which can be moulded in any form, while the legs are spastic and immobile. This condition varies in duration, it being now about fifteen minutes; but often it is of much longer duration. Just before coming out of the attack she moves her head slowly from side to side, goes through writhing movements, takes a few more rapid inspirations, groans, and the seizure is over. The pupils are not markedly dilated, and she usually asks for a drink of water at once. Sometimes she would be sensible and right in a few minutes, and then go off again; at others, one fit follows another in rapid succession, with no lucid interval. After the fit the patellar reflex was increased, and slight ankle clonus could be elicited. The conjunctival reflex was present during the attack. Pressure over the ovarian region and other hysterogenetic areas had no effect on the fit in any way. Menstruation did not seem to have any influence on their frequency or severity. During the intervals sensory functions are normal, and there is no spastic gait. Speech was said to be always somewhat peculiar, but it has been much more so since this illness. The voice has a peculiar cracked tone, the words are half stammered and stuttered out, but there does not appear to have been ever absolute aphonia or aphasia at any time. In December 1889, a p.v. examination was made during a fit, under considerable difficulties, on account of the powerful adduction of the thighs; the vagina was normal, as were also the ovaries; but the uterus was retroverted, small, but non-adherent. No effect was noticed as regards the fit by this examination.

She has been treated chiefly by bromides, which have had little or no effect. Up to January 1890 she was in the following condition, as compared with several years previously:—

1. Little difference in the frequency of the fits.
2. No difference in the duration of an individual fit.
3. Cataleptic condition less marked.
4. Mental condition dull, though sensitive and nervous.

5. Speaks with a stammering, scanning sort of impediment, and the voice has a peculiar cracked tone.

6. Bodily condition somewhat improved, now being able to be up.

In January 1890 a Hodge pessary was introduced under chloroform, and the uterus replaced. Some pain and vomiting followed, but passed off in two days. One year after this the state of the patient as reported by her relatives, as a personal interview was impossible, was as follows:—

1. Fits considerably less frequent.
2. Duration of fit not quite so long.
3. Sunday still considerably the worst day, being up only in the afternoon.
4. Rigidity of limbs less.
5. No change in the mental condition.
6. General condition, being up and doing house-work, considerably improved.
7. Speech perhaps very slightly better.

One interesting feature in the improvement is the lessened spasticity of the lower limbs since the replacement of the uterus, thus comparing with the case of Reflex Spastic Paraplegia which I reported in the *Edinburgh Medical Journal* for June 1889. That case was practically cured by the reposition of a subinvoluted uterus, and I then endeavoured to trace the intimate nervous connexion between the uterus and the nerves of the legs through the medium of the pelvic sympathetic system.

Remarks.—The nervous disturbances which may be sequelæ of typhoid fever are somewhat various in their forms. In the first place, one has to note that non-vesanic delirium appears in all severe cases, and that genuine insanity is not exactly rare, as is seen by referring to statistics of some authorities; thus Nasse found 43 cases of insanity in 2000 cases of typhoid, Schlager 22 in 500, Christian 11 in 2000, which gives an average of 17 per 1000. This is, perhaps, too high a figure, and would probably be reduced if a larger number of cases were taken.

The other nervous symptoms, which may be sequelæ, are peripheral neuritis, epilepsy, incomplete catalepsy, and aphasia in one of its forms.

These various cerebral and nervous phenomena are due in this, as in all infectious fevers, to several causes acting to a large extent conjointly. Thus there may be (1) a direct action of the microbes on the nervous centres; (2), the products secreted or produced by the microbes may act on the centres, or auto-intoxication result from the imperfect elimination of these products; (3), certain organic changes may be induced by thrombosis, embolism, or hæmorrhagic extravasation into the cerebral substance; (4), apparently purely functional cerebral derangement may result from cardiac weakness and general nervous exhaustion.

The purely mental symptoms which may follow any febrile condition are characteristic of the acute confusional type of insanity, and may be divided into three forms—the maniacal, melancholic, and demented. There are two periods when mental symptoms may appear—(1), during the acute stage, in which case it is said to be pertyphic; or (2), during convalescence, when it is called post-typhoid. The pertyphic cases are usually of the maniacal form, and are rarer than those which occur during the convalescent period, which are usually of the melancholic type, though sometimes mania or a pseudo or actual dementia may supervene and persist for a long time. This variation in the form of insanity, according to the time at which it develops, is common to all cases of acute confusional insanity, whether it occurs after fevers or after other conditions, such as the puerperium, trauma, or a surgical operation.

The dissolution of the cerebral functions which occurs in connexion with acute bodily disease is usually of a temporary character, and, as has been shown, it may vary in depth; but in some cases the insanity is of a more serious type, becomes chronic, and ends in terminal dementia after a varying number of years.

Silva reports a fatal case of epilepsy during the course of typhoid in a child 10 years of age. It was apparently an instance of a pneumonic infection during the incubation period of the typhoid, for there were two days quite apyretic between the termination of the pneumonia and the commencement of the typhoid. The exact day of the illness is not given, but it must have been in the middle of the second week, up to which time the typhoid had run an ordinary course. She had a sleepless night with delirium, and in the morning an ascaris was vomited. Santonin was given with a negative result, and next day serious collapse occurred, convulsions setting in on the following morning. The patient became rigid with opisthotonos, the limbs extended, and the hands clenched, while the eyes were open, turned upwards, and the pupils were small and inactive. Clonic convulsions then appeared, with cyanosis and great embarrassment of respiration. These symptoms continued with slight intermission for four hours, after which profound coma set in, and she died four hours later.

The post-mortem showed a normal dura mater; the pia mater was congested, infiltrated with serum, and adherent to the convolutions, specially round the Sylvian fissure, but no tubercle was traced. The cortex was hyperæmic, soft, and œdematous; the spinal cord was normal. The intestine showed many well-defined typhoid ulcers, but no perforation, and as no mention is made as to the presence of any ascarides, it may be presumed that there were none. Cultures from the cortex revealed the Eberth bacillus, but no other microbe. The patient's mother died at the age of 19, during an epileptic convulsion, so that there might have been an hereditary predisposition to this class of symptoms, but the presence of an ascaris complicates the case. Still, probably the condition of the cerebral cortex was sufficient to account for the serious nervous symptoms and the fatal result.

Wyllie has lately directed special attention to aphasia in such cases, and remarks that typhoid, more frequently than any other febrile disease, may have this as an accompaniment or occasional sequel. Aphasia has also been met with during or after typhus, small-pox, measles, intermittent fever, yellow fever, etc. Functional cases are far more frequent than organic ones, and usually appear in the later stages of a severe case after other severe nervous symptoms have been manifested. It is not accompanied by hemiplegia, is mostly found in boys, and usually passes off in a few days. Occasionally it persists during the whole period of convalescence, with ultimate recovery, however.

Organic aphasia is always suddenly developed along with hemiplegia, and, if the patient recover, both affections are apt to be permanent. Its most usual time of appearance is during the convalescent stage when the heart is becoming more powerful, thus differing from the functional variety. It is usually a motor aphasia, though the exact nature of it varies with the site of lesion, and it seems to be as frequent in adults as in children. Besides these two forms there is a third, which Wyllie terms "dysarthria." This is a purely motor disturbance, not an aphasia proper. Westphal has also noted this form of articulatory defect, and has described a slow *staccato* utterance as being not infrequently met with in the course of small-pox. Wyllie thinks that slurring is perhaps the most common articulatory defect in any form of fever, and that it is of grave significance if extreme in degree. He quotes a case of this slurring gradually increasing to absolute inarticulateness during the last eight days of a case of typhoid fever, though she was evidently quite conscious.

The present case, I have no doubt, is an example of this speech defect. Though she was said to have had some peculiarity of speech before her illness, all her friends noted the most marked alteration in her powers of articulation and in the tone of the voice after the attack of typhoid. At the time when I took notes of the case I was unaware of any special notice having been made of this dysarthria, otherwise I would have made more accurate observations of the condition. What was noted at the time was that "the voice has a peculiar cracked tone, the words are half stammered and stuttered out, but there does not appear to have ever been absolute aphonia." Another note is that the speech had a sort of "scanning impediment." The reference to aphonia had more relation to an hysterical condition than to an articulatory defect. The only question of doubt in this case is whether it is an example of organic disease without hemiplegia, as it has persisted for seventeen years after the fever when I saw her, and certainly for two years after that, so that it is practically a permanent defect.

Whether dysarthria could be the result of a local peripheral neuritis has not been investigated so far as I am aware of, but this seems worthy of attention.

Ord also records a case of typhoid which was followed by cerebral weakness, imbecility, protracted silence, a monotony or inarticulateness of speech, with slow utterance and loss of memory. It is not said whether this condition was permanent or not.

Incomplete catalepsy has been observed occurring after typhoid fever, meningitis, and intermittent fever, and the present instance seems to be an example of this, complicated with a marked hysterical element, probably the result of the uterine displacement. The nutation of the head, which was an almost constant prelude to the cessation of the fit, reminds one of that movement which is so characteristic of hystero-epilepsy, but the other symptoms are more in accord with an incomplete hystero-cataleptic than a hystero-epileptic state. On the whole, it seems to be an instance of several nervous sequelæ of typhoid, as it comprises not only the dysarthria, but also the incomplete cataleptic condition with a degree of dementia, combined with a strong hysterical element.

IV.—A CASE OF "GORE" OF THE ABDOMEN BY AN ELEPHANT'S TUSK.

By Surgeon-Major T. K. Macdonald, M.B., L.R.C.S. Ed., Indian Medical Service.

Whilst in medical charge of the arrangements of the Sanipore Fair, in the district of Sarun or Chapra, of which I was civil surgeon, in November 1894, the following very rare and remarkable case came under my care, which in those days of advanced abdominal surgery may be of interest.

Gudir Mea, a Mahommedan male, about 46 years of age, an elephant driver, of spare frame, and of the most strictly temperate habits, was admitted into the Sanipore Camp Hospital on the 12th November 1894 at 9 a.m. It appears that he was sitting down in front of the elephant of which he had charge, which was one of over two thousand at the Fair, when the animal, which took fright at a passing railway train, charged his poor keeper, pinning him through the abdomen to the ground, thereafter tossing him off his tusk into the air, and leaving him for dead on the hard camping ground. On admission the patient was found by the hospital assistant in charge to be completely collapsed, and his wounds and injuries so extensive that he put off two hours before sending for me to my tent, about half a mile off, as he expected the man to die immediately. On seeing him at 11.30 a.m., I found him pulseless, with extremely feeble heart's action, and breathing gasping. After some trouble, I managed to introduce two ounces of brandy into his stomach with gum elastic tube and small glass filler, and gave him a subcutaneous injection of morphia thereafter, on finding the heart responded to the stimulant. On examining his injuries, I found the left side of the scrotum torn from base to apex, and the left testicle and cord hanging out through the wound; there was a laceration of the skin and subcutaneous cellular tissue extending at right angles to the scrotal wound from the pubis to the left iliac spine, which admitted the hand, which could be passed up between the muscles of the abdomen upwards, as high as the umbilicus, and laterally as far as the upper margins of the iliac region on both sides, and the abdominal muscles were felt to be lacerated to the extent of 4 inches, and several coils of intestine protruded through the opening, which was situated in a line passing obliquely upwards from the middle of the left groin towards the umbilicus. In the right lumbar region was found another lacerated wound irregularly oval in shape, and 3 inches in diameter, its lower margin just touching the junction of the posterior and middle third of the crest of the ilium, and the finger could be freely passed into the abdominal cavity. Very little hæmorrhage took place from either of the wounds. On learning the history and looking at the wounds, it was evident that the elephant's tusk passed obliquely through the man's abdomen from the left iliac to the right lumbar region. The tusks were examined on the spot, and the right tusk was found smeared with blood to a point about 16 inches from the point, and to be 14 inches in circumference at a point 8 inches from the tip of the tusks. The tip of the tusks was, fortunately for the patient, shaped like the smaller end of a turkey's egg, and not so pointed as many elephant's tusks often are. Finding the patient had rallied, and that it was well to attempt to give him a chance for his life by exploring his abdomen for possible bleeding vessels or wounded intestine, and cleaning out the sand and dirt left by the tusk as it was withdrawn from the sandy ground, I, with the help of my hospital assistant and a lay friend, who happened to be on a visit to me from Edinburgh, proceeded to give him chloroform, which he took well. I then laid open the flap of skin in the left iliac region, exposing the deep abdominal wound, which I enlarged upwards and downwards, so as to enable me to thoroughly explore the abdominal cavity, making a long wound passing obliquely from the umbilicus to about the middle of Poupart's ligament. I found the intestines intact, and no bloodvessels injured. There was a considerable quantity of blood mixed with grains of sand found amongst the coils of the intestine. This I removed as carefully as was possible with tepid boracic lotion, and the gentle use of the two only new sponges at my disposal. After removing every particle of sand and drop of blood in the abdominal cavity, I closed the front deep abdominal wound with catgut ligature in the form of a continuous suture passing deeply through the muscles, and including the peritoneum; and the skin wound was closed with horse-hair suture. The lumbar region wound was partially closed by deep catgut and superficial horse-hair suture, and a large drainage-tube passed into the abdomen through it. Perchloride of mercury lotion (1-3000) was used to purify the wounds both before and after the operation, and boracic lotion, as already stated, for cleansing abdomen. Mercurial dressing and carbolized tow were used throughout the case, and antiseptic precautions were used as far as circumstances admitted. With the exception of some sloughing of the skin over the abdomen, the patient made an uninterrupted recovery, and his temperature never rose above 101° F. on the third day. He left the hospital at Chapra, where he was removed from Sanipore a fortnight after the accident, within ten weeks of his accident, with his wounds completely healed up, and in excellent health, apparently none the worse of the elephant's tooth passing through his abdominal cavity. The only regret is that the patient, being a Mahommedan, left the hospital before he could be photographed, this religious sect having strong religious scruples to having their own pictures or those of animals taken, I suppose in contradistinction to Hindoos, who are so fond of the worship of images and pictures of human beings and the lower animals.

V.—EXTENSIVE CELLULITIS WITH NECROSIS OF THE SKIN OF THE ABDOMEN IN AN INFANT.

By William Elder, F.R.C.P.E., M.B. C.M., Physician to Leith Hospital.

The following case is worthy of recording, because it must be one of considerable rarity.

The patient, a baby, was born on the 21st day of March 1894, apparently quite healthy. He was a small baby, but this was accounted partly for by the fact that he was born about the eighth month. There had been five other children in the family, most of whom were also slightly premature, but all of them were healthy when they were born. With the exception of a tendency to affections of a strumous nature, there is nothing unusual in the history of the family. No history of specific disease. During the time that the mother was pregnant with this child she did not enjoy very good health. She was nervous and sleepless, and had always a dread of something going to happen either to her or the baby.

The baby kept well till April 7, seventeen days after birth, when the mother noticed that the left breast was a little more prominent than usual and tender to pressure. On the 9th an abscess was seen to be forming, and on the 10th the skin over the left breast gave way, and there was a discharge of pus tinged with blood. It was dressed with boracic lint and it healed up in a few days ; but just as it healed the other breast also became tender, red, and swollen, and an abscess formed in it also, which opened on the 16th April, and there was a discharge of about three-quarters of a teacupful of thin pus. Before it was opened the redness, which began in the breast, had spread down the right side and over to the left of the abdomen to about the junction of the epigastric and umbilical regions, with the hypochondriac and lumbar on the left side. The whole of these regions on the right side was red and erysipelatous-looking. On the 17th an area about 2 inches long and 1 broad, immediately to the left of the middle line, and beginning about 1½ inch above the umbilicus, was seen to be slightly livid.

On the 18th the lividity was still more marked, and on the 19th, just at the upper part of this area, a whitish patch had appeared which was evidently a small slough.

This slough separated, and at the same time the rest of the bluish patch also became white and sloughed off. There was now an area about 2 inches by 1½ inch where the skin and subcutaneous tissue had sloughed off, leaving the deep fascia and the rectus muscle quite bare but healthy looking. The fibres of the rectus were quite evident. The edge of this ulcer was undermined and the skin around was red and inflamed, there being a distinct red line about ¼ inch from the margin. The edge of the wound maintained this character throughout the course of the disease until nearly the end, when the process seemed to be more rapid, and consisted more in the necrosis of the subcutaneous tissue in larger masses, so that the skin could be moved over the muscle in the same way as a jersey can be moved over the surface of the body, the skin being quite undermined. The area of the wound grew therefore gradually larger, and this was brought about partly by the gradual spreading of the destructive process, and partly in the following manner:—

The digestive organs of the child got out of order, and there was constantly present much flatulence in the stomach and intestines. This flatulent distension produced two results: 1*st*, an umbilical hernia developed, which never, however, attained much size; and, 2*nd*, the destruction of the skin in the upper part of the abdomen seemed to take away the resistance or elasticity of the abdominal wall, so that the distended organs (chiefly the stomach and large intestine) pushed forwards, separated the recti muscles, and projected through the hole in the skin, being covered only by the peritoneum and the different layers of fascia in the abdominal wall.

The result of this was that the wound in the skin seemed larger than it really was. The sloughing above extended to the costal margin and sternum, but did not extend beyond this, the edge of the wound following the costal margin exactly, and here there was little or no undermining. The measurement of the wound at death was 5 inches in each diameter, and it will be understood that part of this was only apparent destruction of skin, when I say that it began at the ensiform cartilage above, and only extended to an inch above the umbilicus. It did not extend below the level of the umbilicus on the left side, but slightly below its level on the right side, about 2 inches external to the umbilicus.

On 23rd April there was a small discharge of pus from a small opening in the skin in the right inferior axillary region. This opening also from this date began to gradually enlarge, and on the 28th, when the child died, it was circular in form and about 1½ inch in diameter. The serratus magnus muscle was seen quite distinctly in the floor of this second opening, being covered by muscular fascia. The skin between the margins of the larger and the smaller wound was livid in colour and undermined, so that it could be made to slide over the muscle underneath, the subcutaneous tissue having disappeared. Posterior to this second opening the skin gradually became more livid, and at death the lividity extended quite to the middle of the back, there being a large patch of skin 3 or 4 inches long by about the same in breadth, the vitality of which had almost entirely gone. During the progress of this necrotic process on the abdomen the wound in the right breast healed up, but a few days before the death of the child a small collection of pus appeared in the left breast, which had been the first to be affected. The child got gradually weaker, and died on the 28th April, aged five weeks and three days, and exactly twenty-one days from the date when the first abscess was seen to be forming. A post-mortem examination was made on the afternoon of his death.

The condition found after death will be sufficiently understood by what has been said of the process during life. The stomach and intestines were much distended with flatulence, but otherwise normal. The other abdominal organs, as well as the heart and lungs, seemed normal. Pieces of the skin from the margin of the wound, together with a piece of the spleen, were removed and sent to Dr Noël Paton at the Laboratory of the Royal College of Physicians, who kindly reported as follows:—

"1. As to the piece of skin sent by you on May 1, I have to report that it shows dermis and subcutaneous tissue in an œdematous and inflamed condition, the epidermis almost entirely desquamated; the epithelium of sweat glands and hair follicles in a state of proliferation.

"2. The spleen sent on May 1 appears entirely normal. There is a very considerable amount of pigment in many of the cells."

Cases of mastitis and mammary abscesses in the newly born are pretty common—but they are usually very limited in area, and the child rapidly recovers after they are incised or have discharged of their own account, but cases of extensive cellulitis following mastitis with destruction of the skin over a large area, as in this case, are rare in medical literature.

Mr Joseph Bell, who kindly saw the case with me, cannot recall one exactly similar from his large experience. I find that Bouchut, in his *Treatise on the Newly Born*, 1867, page 719, records a case of mastitis where inflammation extended to the connective tissue, with extensive ulceration, so that the pectoral muscle was exposed and the child died from prostration. Jacobi, in the *Archives of Pediatrics*, March 1888, states that he has observed several such cases.

The appearance and spreading of the disease suggested to one's mind the resemblance to such a disease as cancrum oris or noma, but there was one distinct difference, in addition to the locality involved, and that was the fact that the disease in this case did *not* invade muscular tissue, but was limited to the skin and subcutaneous tissue. The process consisted in a very acute inflammation followed by a rapid necrosis of the skin and subcutaneous tissue, the latter, however, being much more extensively involved than the former. It spread from a centre, and in the skin there was a distinct line separating the healthy from the necrosed portion. The disease seems undoubtedly to have been due to some form of septic organism, but whatever the cause, it advanced very rapidly, and treatment, which was directed to supporting the vital strength of the child and soothing and rendering aseptic parts locally, had little or no effect in stopping the progress of the disease.

VI.—PATHOLOGY OF THE NERVOUS SYSTEM IN RELATION TO MENTAL DISEASES.

By W. F. Robertson, M.D., Pathologist, Royal Edinburgh Asylum, Morningside.

(*Continued from vol. xl., page* 1005.)

Article VII.

Morbid Conditions of the Intra-cranial Blood-vessels.

The subject of the relation of derangements of the intra-cranial blood-vascular system to insanity naturally divides itself into two sections: one concerned with the pathology of the cerebral circulation apart from actual structural changes in the vessel walls, and the other dealing with such structural changes and their consequences. As the main purpose of the present series of articles is to describe the histological changes associated with mental diseases, I shall confine myself to the consideration of the latter of these divisions. This limitation is the more necessary since the former section is really a very large and complicated one, inseparably bound up with many difficult problems concerning the physics of the intra-cranial circulation, of which the recent literature is both extensive and controversial. It would, therefore, be impossible to discuss it adequately, except at considerable length.

As far as our present knowledge goes, none of the vascular lesions found within the brain in insanity are peculiar to this class of diseases. Nevertheless, certain of these lesions are beyond doubt very commonly developed in the insane to a degree to which they rarely attain in the mentally sound. All mental disturbance is ultimately due to disordered or arrested functional activity of cortical nerve cells, and, therefore, any influence that intra-cranial vascular disease may have in the production of insanity must be exercised through these nerve cells. In many cases of mental disease the vascular lesions are obviously of too slight a character to cause any appreciable interference with the nutrition of the nervous structures. In another set of cases, though developed to a degree sufficient to produce such an interference, they cannot be regarded as a primary cause of the insanity, as there is proof that they arise subsequent to its onset. At the same time, such secondary vascular disease doubtless often plays an important part in the production of the later mental symptoms, and may probably in certain cases have considerable influence in preventing or retarding recovery. Thirdly, there is a class of cases in which we are entitled to regard the disordered or arrested action of certain of the cortical nerve cells as primarily due to morbid changes in the walls of the cerebral vessels. In this category we must place at least the vascular form of syphilitic insanity, and those cases of paralytic insanity in which there has been rupture or plugging of the cerebral vessels. In many cases of senile insanity the vascular lesions must also, though not to the same extent in every instance, be looked upon as a primary cause of the cerebral disorder. In connexion with this subject it is to be borne in mind that apparently similar morbid cerebral changes are attended with different degrees of mental disturbance in different individuals. This fact we are obliged in the meantime to attribute to differences of inherent brain constitution.

In selecting certain of these morbid conditions for description in this paper, I have to be guided mainly by the views that I have myself been led to form as to the amount of importance that they severally have in relation to mental diseases. I cannot claim to give an exhaustive account of the subject, for it is one that is yet far from being fully worked out. There can be no doubt that the intra-cranial bloodvessels have been unduly neglected by the pathologist, and that they still present a very large and profitable field for research.

Note on the Normal Structure of the Intra-cranial Blood-vessels. There is a remarkable diversity of opinion among the various authorities regarding the normal histology of the intra-cranial vessels. It is of great importance, however, that it should be correctly understood, for the proper interpretation of certain appearances to be observed in morbid brains is otherwise impossible. My own observations have led me to form very definite opinions on the subject, and so important is it that it is necessary to enter into it here in some detail.

The peculiar perivascular canals of the dural vessels have already been described (Article III.). Reference has also been made (Article V.) to a peculiar feature of the outer coat of the pial arterioles. The opinion of Klein that the capillaries of the pia mater possess a special adventitia composed of an endothelial membrane was accepted, and it was stated that a similar layer was to be found immediately outside of the muscular wall of the arterioles. As the result of a very careful study of the nature of this investment, I am led to place a different interpretation upon the appearances to be observed, which, while it in no way affects the conclusions of the former paper, is of considerable importance in connexion with morbid changes presently to be described. The flattened cells lying upon the outer aspect of these vessels are, I am now convinced, merely the connective tissue corpuscles of a delicate layer of white fibrous tissue continuous with the connective tissue of the pia-arachnoid. The trabeculæ, more especially in the deeper layers of the membrane, expand into broad cones of loose areolar tissue, some of the strands of which—usually few in number, but sometimes numerous—join the walls of the vessels obliquely, and are continued for a certain distance along them as an adventitial investment (Fig. 57). In the large pial vessels this investment is fairly thick, but in the case of the arterioles it is, as a rule, extremely thin. It is often, indeed, so tenuous as to be recognised only with difficulty even with high powers, but it is never absent. An endothelial layer lies external to it only when the vessel is in immediate proximity to an arachnoid space. In the normal condition this adventitial investment is always fibrillar and never homogeneous. The view that there is a special lymph space surrounding the small pial vessels is, I am satisfied, an erroneous one. Appearances suggesting its existence, such as those represented in Fig. 57, are merely the result of partial detachment of the fibrils of the delicate adventitia. At the same time, there is satisfactory evidence that there are distinct lymph spaces within the thicker adventitia of the larger pial arteries. The pial veins are remarkable for the thinness of their walls, which contain no muscular fibres, and for their large calibre. From the arterioles of the pia mater numerous small branches pass vertically into the substance of the hemispheres. They are spoken of as cortical or medullary, according to their distribution. The larger of them have a well-developed muscular coat, usually consisting of a single layer of muscular fibres (Figs. 42 and 56). In common with the smaller pial vessels, they have no internal elastic lamina. The adventitia is a very delicate layer directly continuous with the connective tissue fibrils of the pia-arachnoid (Fig. 59). The lumen of many of the larger arterioles becomes narrowed by about one-third as the vessels leave the membrane (Fig. 59). The intra-cerebral veins have the same characters as those of the pia-arachnoid.

The existence of a lymphatic channel in relation to these intra-cerebral vessels has long been recognised, but its exact anatomical position is still a matter of disagreement. It was maintained by His that it lay external to the adventitia, and was therefore perivascular. Virchow and Robin described a lymph space between the muscular coat and the adventitia. Obersteiner (1)[1] believes in the existence of both of these lymph channels, while Golgi and Boll, Adler (3) and Batty Tuke (4) hold that there is no perivascular space but only an adventitial channel. Many authors continue to refer to the perivascular spaces of His. My own observations lead me to the conclusion that those observers are right who say that a perivascular space has no existence in the normal brain, and that the only lymph channel is that in the wall of the vessel. The comparison of fresh sections with those of tissues hardened in bichromate solution, and with those prepared by Nissl's method, leaves it, I think, beyond doubt that the appearance of a perivascular space in the normal brain is produced as the result of contraction of the tissues by hardening reagents. That there is an adventitial space can be conclusively demonstrated, and a second channel seems unnecessary. According to Bucknill and Tuke (5) His has himself abandoned his theory. It may be accepted that the nervous tissues lie immediately external to the adventitia, and that to this the perivascular processes of the neuroglia cells are attached. The adventitial space is usually spoken of as if it lay between the adventitia and the muscular coat. A very delicate connective tissue layer, however, may be demonstrated upon the muscular coat so that the space is really intra-adventitial. It opens into the arachnoid sinuses. Authorities have hesitated to commit themselves to an opinion as to whether or not the adventitial lymph channel is lined by endothelial cells. The point, however, is one of considerable importance to decide. Obersteiner (1) seems inclined to the view that such cells are present, stating that many observers have demonstrated them, by treatment with silver nitrate, both on the inside and the outside of the adventitia. While not presuming to speak very decidedly on the point, I think that the microscopic evidence goes to show that the adventitial lymph space has no endothelium, though it is certainly contrary to what one would expect. The adventitia seems to be composed only of delicate white fibrous tissue, connective tissue corpuscles, and certain pigment granules presently to be described.

Key and Retzius seem to have been the first authorities to contend that the cerebral capillaries have a special adventitia in addition to their endothelial intima. While their statement has been disputed by several investigators, the same opinion has been expressed by Bevan Lewis (6) and Obersteiner (2), and it has recently been given strong support by the observations of Lapinsky (8) with Kronthal's method. Bevan Lewis and Lapinsky have independently maintained that there are two forms of nuclei in these capillaries, elongated and rounded, which respectively belong to the intima and adventitia (Fig. 44). The latter observer describes these nuclei very minutely, pointing out that, among other distinctive features, the rounded project from the capillary wall and stain deeply with carmine, while the elongated do not project and stain faintly. The existence of this adventitial investment of the cerebral capillaries must be regarded, I think, as well established. It is to be looked upon as consisting of two elements, connective tissue cells and exceedingly delicate fibrils,—the latter being continuous with the connective tissue of the adventitia of the larger vessels. Woodhead (9) states that such fibrils in the walls of capillaries are of great pathological importance, as it is in them that the process of waxy degeneration is supposed to occur. The existence of a lymph space in relation to these cerebral capillaries must be denied. The adventitial lymph channel ceases before the true capillaries are reached, doubtless opening into the inter-capillary areas which it drains.

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[1] The figures within parentheses refer to Literature at end of paper.

It has long been recognised that the cerebral capillaries are of specially small size. It has been pointed out that the calibre of many of them is less than the diameter of the red blood corpuscles, a minimum of 4·5μ being given by some authorities. The great majority of them, however, are of much larger size. Lapinsky (8), whose observations seem to have been made with great care, says that the largest number have a thickness of from 6μ to 7μ. The existence of some much smaller vessels than those previously observed has been recently described. Kronthal (7), by maceration of the brain tissue in a weak solution of lactic acid, and subsequent staining with picrocarmine, has demonstrated the existence of capillaries having a diameter of only 2·5μ. He concludes that blood corpuscles cannot circulate in such tubes, and that they must transmit only the fluid portion of the blood. Lapinsky (8) has confirmed Kronthal's observation as to the existence of these minute vessels, but finds that some of them are even of smaller size than he attributes to them, being no more than 1·4μ in diameter. Lapinsky, however, differs from Kronthal in maintaining that they transmit red blood corpuscles, which he occasionally observed in their interior elongated into fine rods. He agrees with him that these finest capillaries are not artefacts, and that they are not merely contracted vessels of greater calibre. I have studied a number of cases by Kronthal's method, and have had no difficulty in observing the appearances described by these two observers. Such minute vessels may frequently be seen even in fresh sections prepared by Bevan Lewis's method, which, it may be here remarked, gives a much better general view of the cerebral capillaries than Kronthal's method, though it does not reveal them in such large numbers. I have observed red corpuscles in the finest capillaries as described by Lapinsky. There are, however, I think, few persons who will admit that these minute vessels represent a physiological condition. Notwithstanding numerous arguments brought forward by Lapinsky to the contrary, it is probable that they are merely empty capillaries that have shrunk in calibre after death. If space permitted, microscopic evidence that I think is conclusive might be adduced in support of this contention. It is to be further observed that the cerebral capillaries are capable of remarkable distention, and that their walls, though furnished with a special adventitial investment, are of great delicacy (Fig. 44).

In the adventitia of the vessels in perfectly healthy brains, whether from the human subject or from the lower animals, there may be seen little granules or masses of a homogeneous substance of a pale yellow tint. It may be almost colourless, especially in early life, but is usually of a pale chrome-yellow shade. It occurs in the external wall of the adventitial lymph space of the larger vessels, appearing usually on its outer surface, more rarely upon its inner aspect. On the capillaries it occurs almost exclusively at the side of the rounded nuclei, a fact which furnishes an important argument in favour of their adventitial character. In the perfectly normal state this pigment is present only in very small amount, and on many vessels it cannot be observed. It becomes greatly increased in quantity as a physiological senile change, tending at the same time to assume an orange tint. It is slightly darkened by osmic acid, but is not blackened by it in the same way as fat. It further differs from fat in showing an affinity for certain stains, and in being insoluble in the usual solvents of fat, such as xylol. One or two observers, including Batty Tuke (10) and Obersteiner, have recognised the existence of this adventitial pigment, but it has misled a great number of others who have looked upon it, especially when present in abnormal quantity, either as fat granules or altered blood-pigment. Obersteiner believes that it is developed from fat granules by a process of oxidation. The accuracy of this view seems very doubtful, and I think it is more probable that the substance is a true tissue pigment, analogous to many others found in the body.

Obersteiner states that fat granules and fat granule cells occur normally in the adventitial sheath of the cerebral vessels, especially in early life. He even declares that he has found fat granules in the muscular coat of the arteries as often in healthy as in diseased brains. The importance of these statements, if accurate, is obviously very great. While I am unable to record any observations of my own as to the presence or absence of such appearances in the brain in early life, as far as these statements apply to the adult I am entirely unable to confirm them, and I think that there is every warrant for accepting the teaching of the numerous authorities who have described the presence of fatty granules in the walls of the cerebral vessels as a pathological condition, though, as I shall point out, they have probably over-estimated the frequency with which the morbid change occurs.

The question of the extent to which the cerebral vessels anastomose with each other is one that has given rise to some disputation. As it has some bearing upon the subject of the present paper, reference must be made to it. Heubner (11) has maintained that the communications between the pial arteries are very free, taking place between those of one millimètre in diameter. Duret (12), whose views have the support of Charcot (13), has, on the other hand, asserted that these anastomoses of the pial vessels are unimportant, and that the arteries between which they occur never exceed one-fourth of a millimètre in diameter. In specimens of the pia-arachnoid examined in horizontal view, in which the course of every vessel can be followed, I have observed these arterial anastomoses to occur with considerable frequency. Four or five of them may often be seen in a preparation consisting of about half a square inch of the membrane. As I have seen them, they always occur between arterioles containing only a single layer of fibres in their muscular coat. It is generally agreed that there are no anastomoses between the intra-cerebral vessels except by capillaries. Charcot (13) has further insisted that even this form of anastomosis does not exist between the central and the cortical arterial systems.

There is one other feature in the arrangement of the cerebral vessels, which, though it is, I am convinced, of great importance in relation to cerebral pathology, has not, as far as I am aware, been specially drawn attention to. It is that the outermost layer of the cortex, and also to some extent the layer of small pyramidal nerve cells, are not supplied by lateral branches from the larger cortical arteries, but by a special system of very short vessels. These contain no muscular fibres in their walls, which differ from those of capillaries only in the much greater thickness of their adventitia. They break up into a capillary network in the first layer of the cortex, and partly in the second, and return their blood by way of minute venules, which are indistinguishable from the efferent vessels, except by the fact that they may be seen to discharge into the pial veins. The fibrous wall of these venules is sometimes remarkably thick, a condition which is represented in Fig. 58, but it never has a homogeneous appearance in the healthy state. This system of vessels is pre-eminently the seat of an important morbid change that very commonly affects the cerebral vessels.

Pigmentary Deposits.—One of the most striking features in fresh sections of the cerebral cortex of patients dying insane is often the abundant yellow pigment that lies upon the walls of the vessels. Out of seventy-two cases made the subject of special investigation, I have found this abnormal appearance in fifty. The pigment seems most commonly to be lying on the outer aspect of the adventitia, but it may be in the adventitial lymph channel, or, though only rarely, among the adjacent nervous tissues. It is most abundant on the arterioles (Figs. 48, 49, and 50), but the walls of the veins and capillaries are also frequently studded with it (Fig. 51). In seeking to understand the significance of this deposit we have to recognise that practically two forms of pigment may occur on these vessels, namely, the adventitial pigment and hæmatoidin granules. As already stated, the former becomes greatly increased in amount as a physiological senile change. There can be little doubt, however, that this increase becomes still more marked in association with many forms of morbid change in the brain. It is in senile insanity that it reaches its acme. By far the greater proportion of this abnormal pigmentary deposit is undoubtedly of this nature. The proof of this lies in the fact that it is for the most part of a much paler yellow colour than hæmatoidin, and that in many instances it has a wax-like appearance (Fig. 49), which altered blood-pigment never assumes. At the same time granular deposits of the latter substance about the walls of the vessels are also undoubtedly common in insanity, and they have a much greater pathological importance. Unfortunately in many cases it is extremely difficult, and often impossible, to distinguish between the two forms of pigment. So long as the adventitial pigment retains its pale yellow colour, its true nature is clear enough. But it frequently assumes an orange tint, exactly like that of hæmatoidin granules. It is in these cases that the distinction of the two is attended with so much difficulty. I am aware of no convenient test that can be employed to differentiate them. I have applied those usually given for hæmatoidin to the pigmentary deposit in thin subdural false membranes, which is undoubtedly of this nature, and they have proved quite unreliable. Hæmatoidin granules are certainly of frequent occurrence in the adventitial lymph space in senile insanity and in general paralysis apart from hæmorrhagic softenings, but owing to the want of convenient tests I am unable to speak more definitely upon the matter. The whole subject of this pigmentation of the cerebral vessels is one needing further investigation.

Fatty Degeneration.—Many of the observers who have described the occurrence of fatty degeneration in the cerebral vessels have undoubtedly included in this category the appearances presented by the paler shades of adventitial pigment. This circumstance probably explains why the cerebral vessels have come to be regarded as specially prone to fatty degeneration. I have examined the cortical vessels in osmic acid preparations in thirty-five cases of insanity, and, apart from softenings, have found true fatty changes only in four, and in none of them was it a well-marked condition. I therefore conclude that the vessels of the brain have no special proclivity to fatty degeneration over other vessels in the body. When the condition is observed to affect them, it is probably, as in other organs, usually of recent development and of little significance. It is different, of course, in the case of vessels in softenings which constantly undergo fatty degeneration, owing to interference with their nutrition. As mentioned below, the muscular coat of the pial and intra-cerebral arterioles undergoes, in association with hyaline fibroid degeneration, a disintegrative change which is, in part at least, of a fatty nature.

Hyaline Fibroid Degeneration.—In the year 1872 Gull and Sutton (14) published their classic paper upon "Arterio-capillary Fibrosis" and its relation to chronic Bright's disease. They described as a general disease of the vascular system, specially liable to occur after the middle period of life, a peculiar "hyaline fibroid" change, affecting the outer coat of the small arteries and the walls of the capillaries, to the occurrence of which in the kidney they ascribed granular contraction of that organ. They found that it could be most conveniently studied in the vessels of the pia mater, and on this account their descriptions of its microscopic characters are chiefly founded upon appearances observed in this membrane. The accuracy of their observations, and of the conclusions that they based upon them, has been keenly disputed by numerous authorities in this country. I have here, of course, nothing to do with the matter in so far as it relates to the pathology of chronic Bright's disease, but the question of the implication of the intra-cranial vessels by the morbid condition they described is one that bears in an important manner upon cerebral pathology. High authorities have declared their conviction that the morbid appearances described by Gull and Sutton are entirely due to the effect of the reagents employed, and there are pathologists who still maintain this view. On the other hand, investigators equally competent have stated that they are able to confirm the original observations. Little attention seems to have been paid on the Continent to Gull and Sutton's work, but descriptions have there been given under other names of morbid changes in the cerebral vessels, which beyond question are in many instances identical with the hyaline fibroid degeneration of the English authors. My own observations have led me to form very definite views upon this subject, about which there is at the present time so much uncertainty and confusion. I am convinced that the descriptions given by Gull and Sutton of hyaline fibroid degeneration of the pial vessels are in every detail, as far as they go, in accord with morbid changes that actually occur, and that the theory that the appearances are produced by the action of certain reagents is wholly untenable. Some observers, while acknowledging that there is such a change as hyaline fibroid degeneration, have said that it occurs so commonly in otherwise healthy individuals that it can have no pathological importance. The same argument might with equal force be urged against the importance of atheroma. In their slighter degrees both are exceedingly common, but have little or no effect upon the health of the individual. It is only when the morbid changes are far advanced or specially active that grave disturbances are produced by them. The truth of this as regards hyaline fibroid degeneration seems to be appreciated by Jacobsohn (15)—granting that the condition of "arterio-sclerosis" described by him is the same morbid change, of which I think there can be no question—who says that it is the most common disease of the vessels of the central nervous system, but that we must divide it into two groups, namely, a mild and a severe form, of which only the latter has pathological importance. In this severe form hyaline fibroid degeneration of the cerebral vessels is very common in certain types of mental disease. Indeed, I am convinced that it is by far the most important vascular change associated with insanity. It is entitled to be so regarded, not because of the consequences of its occurrence in the vessels of the pia mater, but for the reason that it specially implicates the short vessels that I have described as supplying the first and second layers of the cortex.

The different stages of the morbid process are most easily studied in thin horizontal sections of the pia-arachnoid. According to my own interpretation of the appearances that may be observed, they are as follows:—The earliest departure from the normal state, as seen in the small arterioles, is the formation immediately outside of the muscular coat of a thin sheath of a perfectly homogeneous substance which stains somewhat faintly with eosine in hæmatoxylin and eosine preparations, and which has also the other reactions of hyaline material. At this stage the muscular coat is generally unaffected. When, however, the hyaline sheath has become of considerable thickness, as represented in Fig. 62, the muscular fibres are usually much degenerated. They become markedly granular, and their nuclei tend to lose their affinity for hæmatoxylin. The whole muscular coat may become disintegrated and disappear. Finally, the hyaline material becomes replaced by fibrous tissue. In the smaller vessels the only respect in which the morbid process differs is in the absence of the muscular changes. Osmic acid preparations show that some of the granules in the degenerating muscular coat of the arterioles are fatty in character. The majority of them, however, are not of this nature, as they do not give a black reaction with osmic acid, and stain deeply with eosine. In the early stages cellular infiltration of the vessel walls or of the neighbouring tissues is usually entirely absent. In the later stages, however, it is commonly present to a slight degree, while occasionally it is marked. I have not observed that this typical form of hyaline fibroid change is accompanied by any tendency to dilatation of the lumen of the affected vessels. According to Gull and Sutton, the hyaline material may sometimes be seen on the inner aspect of the muscular coat of the arterioles. This observation I can confirm, and I have found that the condition is associated in a very special way with aneurismal dilatation.

What is the nature of this hyaline fibroid change, and how is the fibroid stage reached? Numerous theories have been advanced regarding the origin of hyaline degenerative material. [See Bramwell (16), and Oller (17).] It seems certain that it may arise from more than one tissue element. The view that seems to me to be most probably correct in the case of this vascular lesion is that the hyaline change is analogous to waxy degeneration, in that it consists in a swelling up of delicate connective tissue fibrils. The most convincing evidence of the accuracy of this view is furnished, I think, by the venules which become affected by the change. Their fibrous wall becomes entirely replaced by an even layer of hyaline material, while the endothelium remains on its inner aspect (Fig. 61). If this new substance were an exudation from the blood, it would scarcely be deposited in this even form, nor would the connective tissue fibres thus entirely disappear. This degenerative material cannot develop into fibrous tissue. What probably occurs when the degenerative process is arrested is that leucocytes slowly remove the hyaline substance, while the connective tissue corpuscles in the immediate vicinity proliferate and form new fibrous tissue, which gradually replaces it. The cellular infiltration that is so often seen to be associated with this vascular change is thus, I think, sufficiently explained. It by no means proves the existence of a periarteritis. As to the local and general conditions that determine the occurrence of this degenerative change I am unable to make any statement. Gull and Sutton leave the question practically unanswered.

A marked degree of hyaline fibroid degeneration is an almost constant occurrence in the pial arterioles in senile insanity and advanced general paralysis. It also affects the large cortical arterioles, but generally to a less extent (Fig. 47). As I have already indicated, however, it derives its chief importance from the frequency with which it implicates in a severe form the small vessels of the first and second layers of the cortex. That the change here is the same as that in the pial vessels is proved by the facts that they are constantly associated with one another, that the same process can be traced in each, and that their anatomical continuity can be repeatedly demonstrated. These degenerated vessels can be readily recognised in fresh sections of the brain, in which they appear greatly thickened, usually glassy-looking, but sometimes granular, and of a pale blue colour (Figs. 54 and 55).

But to enable one to fully realise how severely this set of vessels is affected, it is necessary to examine them in thin surface sections of the inner aspect of the pia-arachnoid after it has been properly hardened and stripped off from the cortex. Preparations of this kind, which may be stained with hæmatoxylin and eosine, show hundreds of these short vessels which have been pulled out from the nervous tissues. Their condition in health has been already described. It is represented in the lower part of Fig. 58. In a great many cases, not necessarily of mental disease, it will be found that they show slight hyaline fibroid thickening. Such a condition is of little importance. It is not necessarily attended by diminution of the lumen. In cases of senile insanity, however, the same morbid condition is developed to a very different degree. The majority of the vessels are greatly thickened, their lumen being at the same time diminished, and very frequently completely obliterated. The afferent and efferent vessels and capillaries (Fig. 60) are all affected. The thickened wall stains deeply with eosine. It may appear homogeneous, granular, or fibrillated. Occasionally a few deeply-stained nuclei are seen lying upon it.

It must be evident that this condition, involving as it does in so severe a manner this set of vessels over the greater portion of the cerebral hemispheres, must profoundly affect the functional activity of these two layers. As a matter of fact, it is always associated with advanced morbid changes in the surrounding nervous tissues.

A similar condition is found in advanced general paralysis, but in this disease the capillaries in the deeper layers of the cortex also tend to become involved (Fig. 53). It may be doubted if the lesions in the two diseases are really of the same nature, but microscopically they are certainly indistinguishable. It is in these two forms of mental disease that atrophic cortical softenings are specially apt to occur. The vessels in such areas always show the appearances just described, and I think there can be little doubt that the softening is due to their extensive obliteration, either by the change in their walls alone, or by the addition of a thrombotic process. A number of authorities support the theory of the vascular origin of these softenings, while others are inclined to regard them as primarily due to degeneration of the nerve cells.

Many morbid changes in the cerebral vessels described under various other names, especially by Continental observers, are beyond a doubt identical with this hyaline fibroid degeneration in one or other of its stages. As such, I think, we must regard, for example, the "arterio-sclerosis" of Jacobsohn (15), Alzheimer (18), and Köppen (19), the "hyaline degeneration" of Ziegler (20), and many others, the "endarteritis and periarteritis of the capillaries" described by Lapinsky (8), the "callous degeneration" of Deecke (21), and the "fusiform hypertrophy of the vessels of the brain" described by Obersteiner (1). The hyaline degeneration of the vessels so commonly associated with cerebral tumours is probably the same morbid condition in a very active form. Goodhart (22) has expressed the opinion that the periarteritis of the cerebral vessels described by Charcot and Bouchard as causing miliary aneurisms is also the same thing as the hyaline fibroid degeneration of Gull and Sutton. Unwarranted as such a conclusion at first sight may seem, I think that there is strong evidence to show that it is a correct one.

Miliary Aneurisms.—The subject of miliary aneurisms of the cerebral vessels and the morbid process leading to their development is one of great pathological interest and considerable clinical importance. It has a distinct claim to consideration here on account of its close connexions with paralytic and senile insanity. Miliary aneurisms were first described by Virchow (23) in the pial arterioles in the year 1851, though they had previously been figured by Cruveilhier in his Atlas as apoplectic foci. They were also described by other observers previous to 1866, but Charcot and Bouchard (24, 25, 26), who began to publish their researches in that year, were undoubtedly the first to insist on the frequency of their occurrence within the substance of the brain, and to recognise their great importance in relation to cerebral hæmorrhage. The views of these two authorities on the subject are those still generally accepted, and of their accuracy in most particulars there can now be little question. A very good account of miliary aneurisms will also be found in an article by Byrom Bramwell (27) in this Journal. Though specially associated with advanced age, miliary aneurisms also frequently develop in middle life, and they have been found, though only rarely, in youth. It is known that they are not confined to the brain and its membranes, but may occur in other parts of the body. Within the cranium they may be single, in small numbers, or very numerous. According to Charcot and Bouchard, they are most common in the basal ganglia, next in the pons, then in grey matter of the convolutions, being more rare in other parts of the brain. These authorities state that all miliary aneurisms are visible to the naked eye. While this statement may be true of those occurring in the substance of the brain, it is certainly inaccurate as regards those that affect the pial vessels. Little is said by Charcot and Bouchard about the occurrence of miliary aneurisms in the soft membranes, and they give the impression that it is uncommon. In three cases of senile insanity, however, in which only a small number of miliary aneurisms could be observed in the substance of the brain, I have found them in very large numbers in the thickened pia-arachnoid of the convexity of the hemispheres. In the latter situation the great majority of them were too small to be detected with the unaided eye, and it was only on microscopic examination of thin horizontal sections that they were recognised. I am, therefore, inclined to believe that miliary aneurisms are more common in the pia-arachnoid than is generally supposed, and would maintain that they can never be pronounced absent from naked eye examination alone. I have also found isolated aneurisms on microscopic examination of this membrane in several cases in which they could not be observed at the post-mortem. The small arterioles that have only a single layer of muscular fibre in their walls are the vessels that most commonly dilate. According to some writers, aneurisms may also develop on the capillaries, but, if they do, it is certainly only very rarely. The larger miliary aneurisms, which are easily recognised in the fresh state with the unaided eye, appear usually as highly characteristic dark red bodies of about the size of the head of a common pin. They are generally rounded in form, but may be more or less elongated. Charcot and Bouchard have asserted that the rupture of these aneurisms is the immediate cause of the extravasation of blood in the very great majority of cases of hæmorrhage within the brain, and this dictum is now pretty generally accepted. It is not so, however, in the case of their theory as to the morbid process leading to the development of miliary aneurisms. This theory, though it has received the support of many high authorities, has been disputed by other equally competent observers. Charcot and Bouchard stated that their observations led them to believe that miliary aneurisms were the result of a diffuse periarteritis, the first stage of which was characterised by a multiplication of nuclei in the outer coat of the vessel. This inflammatory condition, they said, caused atrophy of the muscular coat, and so rendered the vessel-wall liable to yield to the blood-pressure. In the later stages the excess of nuclei disappeared, and the vessel became thickened and fibrous. It was in the early stage alone that it tended to dilate. This morbid process, they maintained, though it frequently spread to the middle and internal coats, was sharply distinguished from that which led to atheromatous degeneration of the arteries, and which was rightly called endarteritis (26). This view of the etiology of miliary aneurisms has been opposed by, among others, Zenker (28), Eichler (29), and J. J. Brown (34), who attribute them to atheroma; by Roth (30), who holds that they are the result of amyloid degeneration; by Kromayer (31), who assigns them to colloid degeneration of the media. Eppinger (32) opposes Charcot and Bouchard's teaching on different grounds, contending that "miliary aneurisms" are not true aneurisms at all, but merely examples of ectasis or dilatation, in which all the coats of the vessel are present. He further denies that such conditions have anything to do with cerebral hæmorrhage. Before expressing an opinion as to which of these conflicting views lies nearest to the truth, I shall give a brief account of my own investigations into this subject. I have made an examination of the miliary aneurisms and the associated vascular changes in the pia-arachnoid in the three cases of senile insanity already referred to, using thin horizontal sections of the bichromate hardened membrane. In these preparations practically every vessel was more or less affected by morbid change, and more than a dozen aneurisms or nodular swellings on the vessels of the kind described below were to be observed in many of them. In addition to those three cases, there have been five others in the series of which I have made a special study, in which miliary aneurisms were found either in the membranes or in the brain substance. The conclusion regarding the nature of the process concerned with the development of this vascular lesion which the morbid appearances observed in these cases have led me to adopt, is one entirely opposed to the most commonly accepted theory of Charcot and Bouchard. The mode of development which I think can be traced in these three cases in which the aneurisms were multiple is as follows:—In the small arterioles, in association generally with a degree of hyaline fibroid change affecting the adventitia, a similar hyaline transformation in certain cases occurs in the connective tissue fibrils of the intima which lie between its endothelium and the muscular coat (Fig. 63). The hyaline substance forms usually a narrow band, but occasionally it may appear as globules. This change affects the nutrition of the muscular fibres of the media far more profoundly than a similar degeneration of the connective tissue fibrils on their outer aspect. It is easy to understand why this should be so, for the media derives its nourishment from the blood circulating within the vessel, and the interposition of this hyaline material must to a large extent intercept the supply. The muscle nuclei lose their affinity for hæmatoxylin, and the fibres break down into minute granules, most of which stain deeply with eosine, but some of which also at certain stages give a fatty reaction with osmic acid. In many instances, however, the degeneration is only partial. These changes weaken the vessel walls and render them liable to yield before the blood-pressure. This, I maintain, is the typical process of the development of miliary aneurisms. The more complete the degeneration of the muscular coat the more prone are the vessels to dilate. The state of the arterial pressure must also naturally have an important influence in determining whether dilatation will occur or not. The development of these aneurisms is probably always gradual, giving sufficient time for some reparative tissue change to take place in their walls, which, when the aneurisms are fully formed, consist of white fibrous tissue continuous with the adventitia, and often also with a fibrously thickened intima. The muscular coat is always absent (Fig. 66). Over the greater extent of the vessels affected with the slighter degrees of this hyaline degeneration of the intima no increase of the size of the lumen occurs, but rather a narrowing of it. How long the degenerative process usually continues it is impossible to say, but after a certain time it is, as a rule, followed by a reparative one in which, as described under hyaline fibroid degeneration, the hyaline substance is probably removed by leucocyte action and becomes replaced by new fibrous tissue. Arterioles in which this process has been completed generally show a narrow, irregular lumen, and a wall bounded on its inner side by endothelium, between which and an incompletely degenerated muscular coat there is a certain amount of fibrous tissue. Very frequently there is a wide space either between the endothelium of the intima and the tissues external to it, or between the fibrously thickened intima and the degenerated muscular coat, as represented in the vessels in Fig. 66. This space is probably to some extent exaggerated by the bichromate hardening, but there is satisfactory evidence that it is not altogether artificial. It is occupied by clear fluid which seldom contains many leucocytes. At certain spots in the course of the vessels, instead of a narrow band of hyaline substance appearing on the inner aspect of the muscular coat, a thick layer of similar material may frequently be observed, differing in characters only in usually appearing more opaque and staining somewhat more deeply with eosine (Fig. 64). Nodular swellings are thus formed on the arterioles, which may be mistaken for aneurisms. They are evidently what Kromayer has described as pseudo-aneurisms, and the name is, I think, a very suitable one. The same condition was previously described and figured by Eichler as a form of aneurism, though he recognised that the swelling might be due solely to thickening of the vessel-walls. The lumen of the vessel in their centre is rarely much increased. On the other hand, it is usually diminished, and is frequently completely obliterated. Occasionally, however, an aneurism does appear to form in association with this condition, as is represented in Fig. 65. There can be little doubt, I think, that in these swellings we have merely a localised exaggeration of the more common degree of hyaline change in the intima. The walls of pseudo-aneurisms in time become entirely replaced by fibrous tissue. The reparative process takes place on both the inner and outer aspects of the hyaline mass, fibroblasts apparently extending inwards between the endothelium of the intima and the hyaline substance. In the centre of the fibrous tissue thus formed a small vessel may frequently be seen. I am of opinion that most of the so-called obliterated aneurisms arise in this way. Pseudo-aneurisms are exceedingly common in association with multiple miliary aneurisms, often, indeed, considerably outnumbering them. At the same time, there is no reason to doubt that clotting of blood occasionally occurs within true miliary aneurisms, and leads to their obliteration. The greater the amount of hyaline material formed in the intima of an artery the more complete is the degeneration of the muscular coat, and hence, up to a certain point, the greater the liability to dilatation. But this point may probably be overstepped from the hyaline deposit becoming sufficiently thick and dense to compensate for the destruction of the muscular coat. Hence a pseudo-aneurism is formed instead of a true one. As already mentioned, the vessel in the centre of pseudo-aneurisms is frequently completely obliterated. But, apart from these formations, occlusion of vessels very frequently occurs as the result of extreme thickening of the intima. I have observed that new capillaries tend to form in the neighbourhood of these impervious vessels. I have never seen these changes in the intima developed to any extent, except in conjunction with miliary aneurisms. The evidence of the cases that I have examined forces me to the conclusion that the nuclear proliferation in the adventitia described by Charcot and Bouchard as indicating the existence of a periarteritis is mainly the leucocyte infiltration associated, as already described, with the reparative process in hyaline fibroid degeneration, and that their fibroid stage corresponds with the early and final stages of this morbid change. Dense round-cell infiltration is certainly common around fully developed miliary aneurisms. But, even if inflammatory, it is probably merely a secondary result, and indicates nothing as to their origin. Very strong evidence against their theory is also furnished by the fact that the pronounced periarteritis of the small cerebral vessels, which, as will be afterwards described, occurs in certain forms of brain disease, is not associated with any special tendency to the development of miliary aneurisms. The theory of the atheromatous origin of miliary aneurisms, advocated by Zenker, Eichler, and J. J. Brown, has, I think, a much stronger case in its favour. Charcot and Bouchard have made much of the circumstance that miliary aneurisms are found in a certain number of cases in which there is no atheroma of the larger arteries of the brain. The observation has been amply confirmed, and it must be allowed to have a certain weight in the controversy. But the absence of atheroma in the larger cerebral arteries does not preclude the possibility of its being present in some of their minute branches. The fact also remains that in the great majority of cases miliary aneurisms are accompanied by marked atheroma of the cerebral vessels. In each of my three cases of multiple miliary aneurisms there was an extreme degree of this change in the arteries at the base of the brain. Further, many of the larger pial arterioles showed marked fibro-cellular thickening of their intima, and the smaller arterioles showed in places a similar new formation. This change in the latter vessels, however, could, as I have said, be traced to a hyaline degenerative process affecting the intima, which, further, appeared to have a distinct relationship to the occurrence of arterial dilatation. I cannot, therefore, but regard this hyaline degeneration of the intima as the primary cause of the development of miliary aneurisms. At the same time, the expression of atheroma in the minute arterioles is not precisely known, and it is possible that this hyaline degeneration may at least be induced by very similar and closely allied morbid factors. It may be that it is really the first stage of atheromatous disease in these minute arterioles. This view is indeed very strongly supported by the fact that the subsequent formation of fibrous tissue is frequently much greater than one would expect in a merely reparative process, and, therefore, distinctly points to the occurrence of a chronic inflammatory one.

The contention of Eppinger that miliary aneurisms are merely dilatations of the vessels in which all the coats are retained has not been borne out by the cases that I have examined. In thin sections it could be seen that the muscular coat was always absent. The elastic coat, which he says remains intact, has normally no existence in the small cerebral arterioles.

When one considers the very large number of miliary aneurisms that often exist in a single case, and the frequency with which they may be found in cases in which there has been no apoplexy, it is evident that their rupture is a comparatively rare occurrence. It probably depends more upon conditions of blood-pressure than upon any independent process of weakening of their walls. This seems to account, as has been recently contended by Mendel (33), for the frequency with which these aneurisms rupture in the basal ganglia, the arterial pressure being there much greater than in the cortical system of vessels.

The importance of the relation of miliary aneurisms to paralytic insanity, a large proportion of the cases of which are dependent upon an old cerebral hæmorrhage, is obvious, but something further requires to be said about their rôle in senile insanity. In the series of cases of mental disease in which I have made a special study of the condition of the cerebral vessels, there were twenty-five of this form. I found miliary aneurisms in five of these cases, in three of which, as already stated, they were multiple. These figures, though not warranting any important generalisation, at least serve to give some idea of the frequency with which miliary aneurisms occur in this form of insanity. To the rupture of such aneurisms we are bound to attribute most of the old or recent apoplexies, usually small in size, which are so commonly found in the brain in cases of senile insanity after death. Further, the transient attacks of localised paresis from which some of these patients are observed to suffer have been attributed by Clouston (35) and J. J. Brown (34) to the rupture of one of these aneurisms in the motor areas, with the effusion of only a small quantity of blood, which is soon absorbed. Ample confirmation of the accuracy of this view has been furnished by post-mortem examinations on such cases. I think it is probable, however, that some of the hæmorrhages in these cases take place, not from the aneurisms, but from the new capillaries which commonly form around vessels that have been obliterated by the morbid changes in the intima, associated with the development of miliary aneurisms. Another way in which these bodies may probably produce a certain amount of cerebral disturbance is by pressure upon surrounding structures, especially when they are situated in the cortex. Lastly, the narrowing and obliteration of many of the pial and intra-cerebral arterioles which is associated with the occurrence of miliary aneurisms must seriously interfere with the proper nutrition of the nervous tissues, and so contribute to the production of the mental derangement.

(*To be continued.*)

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DESCRIPTION OF THE ILLUSTRATIONS.

FIG. 42.—Horizontal view of normal arteriole of cerebral cortex. Fresh method. (× 500.)

FIG. 43.—Normal minute arteriole of cerebral cortex, devoid of muscular coat. Fresh method. (× 500.)

FIG. 44.—Normal capillaries of cerebral cortex, showing elongated and rounded nuclei. Fresh method. (× 500.)

FIG. 45.—Horizontal view of large cortical vessel (arteriole?), showing dense cellular aggregation in its walls and excess of adventitial pigment. From a case of advanced general paralysis. Fresh method. (× 400.)

FIG. 46.—Cortical arteriole, showing cellular aggregation within adventitial lymph channel. From a case of syphilitic insanity. Fresh method. (× 400.)

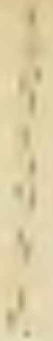
FIG. 47.—Cortical arteriole, showing marked fibroid change. From a case of advanced general paralysis. Fresh method. (× 500.)

FIG. 48.—Cortical arteriole, showing dark yellow pigmentary deposit and cellular aggregation in its wall. From a case of early general paralysis. Fresh method. (× 400.)

FIG. 49.—Cortical arteriole, showing fibroid change and great excess of adventitial pigment. From a case of acute melancholia. Fresh method. (× 500.)

FIG. 50.—Small cortical arteriole, showing great excess of adventitial pigment. From a case of epileptic insanity. Fresh method. (× 500.)

FIG. 51.—Cortical capillary, showing small collections of pale yellow pigment at the sides of the rounded or adventitial nuclei. From a case of senile insanity. Fresh method. (× 500.)



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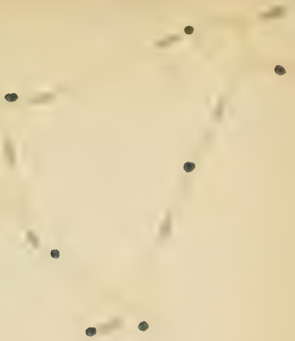

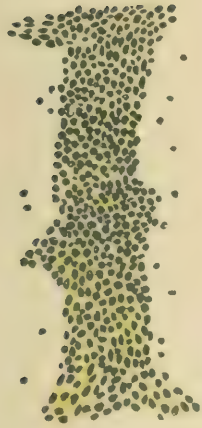

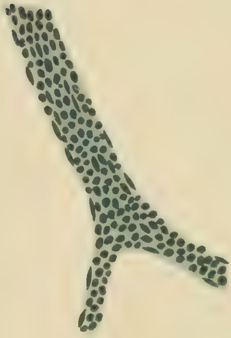

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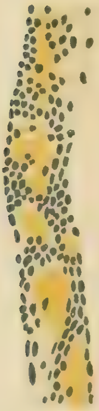

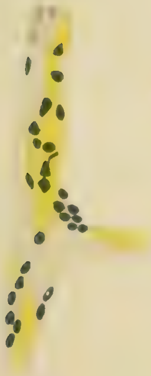

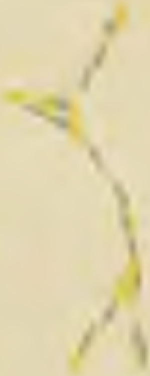

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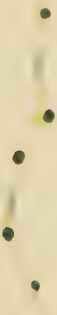

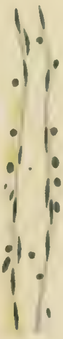

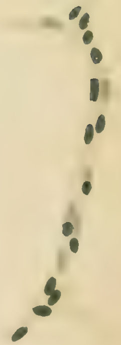

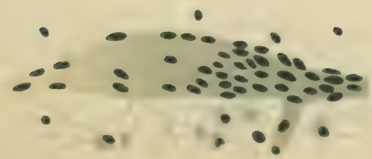

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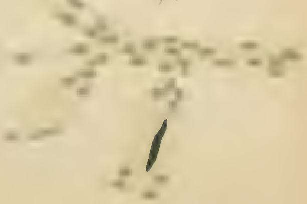

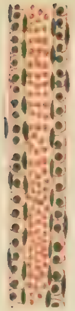

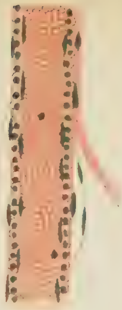

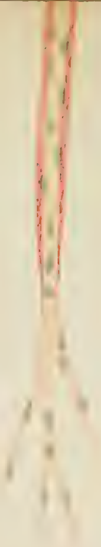

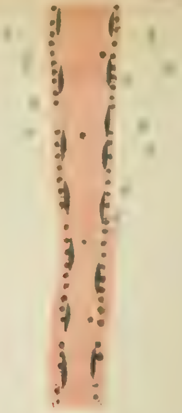

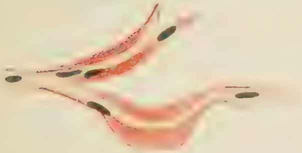

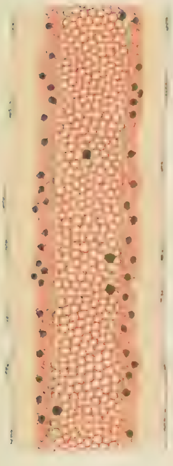

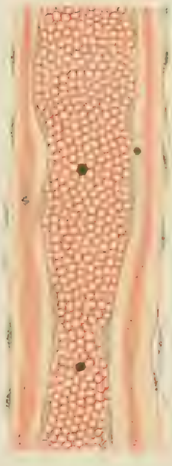

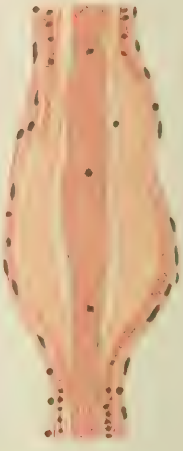

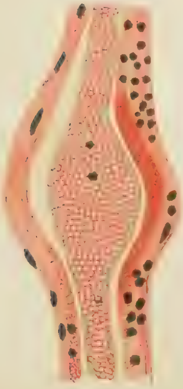

Fig 66

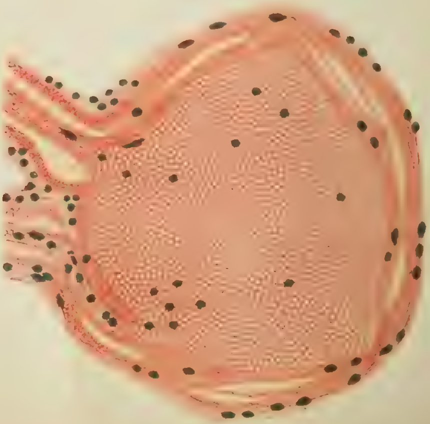

Fig. 52.—Horizontal section of small cortical vessel, showing leucocytes and yellow pigment granules in adventitial lymph space. From a case of general paralysis. Bichromate hardened preparation stained with aniline blue-black. (× 500.)

Fig. 53.—Capillary of cerebral cortex, showing thickening, granularity, and excess of nuclei. From a case of advanced general paralysis. Fresh method. (× 500.)

Fig. 54.—Venule of first layer of cortex, showing great thickening of its walls from hyaline fibroid degeneration, and hypertrophied spider cells in its vicinity. From a case of advanced general paralysis. Fresh method. (× 500.)

Fig. 55.—Small arteriole of first layer of cortex, showing two of its capillary branches greatly thickened by hyaline fibroid degeneration. From a case of advanced general paralysis. Fresh method. (× 500.)

Fig. 56.—Horizontal view (optical section) of normal arteriole of human cerebral cortex. Hæmatoxylin and eosine. (× 400.)

Fig. 57.—Horizontal section of normal pial arteriole of ox. Hæmatoxylin and eosine. (× 400.)

Fig. 58.—Horizontal view of normal small pial venule and efferent capillaries of first layer of cortex of sheep. Hæmatoxylin and eosine. (× 500.)

Fig. 59.—Horizontal view (optical section) of pial arteriole passing into cerebral cortex. Note how the connective tissue of the pia is continuous with the adventitial sheath of the cortical artery, and that the lumen of the vessel becomes narrowed slightly as it leaves the pia. From child. Hæmatoxylin and eosine. (× 400.)

Fig. 60.—Capillaries of first layer of cortex, showing marked localised hyaline fibroid thickening of their walls. From a case of senile insanity. Hæmatoxylin and eosine. (× 500.)

Fig. 61.—Horizontal section of small venule of pia-arachnoid, showing hyaline fibroid change in its wall. From a case of senile insanity. Hæmatoxylin and eosine. (× 500.)

Fig. 62.—Horizontal section of arteriole of pia-arachnoid, showing thick hyaline sheath outside of middle coat, and marked granularity of muscle fibres. From a case of senile insanity. Hæmatoxylin and eosine. (× 500.)

Fig. 63.—Horizontal section of arteriole of pia-arachnoid, showing hyaline change affecting both the intima and the adventitia, and advanced degeneration of the muscular coat. From a case of senile insanity. Hæmatoxylin and eosine. (× 500.)

Fig. 64.—Horizontal section of arteriole of pia-arachnoid, showing localised hyaline deposit between muscular coat and intima, producing a nodular condition of the vessel. Note that a portion of the hyaline material has undergone a change, in consequence of which it stains very deeply with eosine. The muscular coat has partly disappeared. Where it remains it is very granular, and its nuclei are mostly lost. From a case of senile insanity. Hæmatoxylin and eosine. (× 400.)

Fig. 65.—Horizontal section of arteriole of pia-arachnoid, showing an early stage in the formation of a true miliary aneurism. The changes are similar to those in the previous figure, but there is in addition an expansion of the lumen of the vessel. Note that in this and the three preceding figures the endothelial nuclei of the intima are faintly stained. From a case of senile insanity. Hæmatoxylin and eosine. (× 400.)

Fig. 66.—Section of miliary aneurism of an arteriole of pia-arachnoid, showing vessels passing into and out of its cavity. From a case of senile insanity. Hæmatoxylin and eosine. (× 400.)

VII.—OXALURIA AND THE EXCRETION OF OXALIC ACID IN URINE—AN ABSTRACT.

By JAMES C. DUNLOP, M.D.

(*Read before the Medico-Chirurgical Society of Edinburgh, 4th December* 1895.)

THIS paper is an abstract account of an investigation which I have carried on in the Laboratory of the Royal College of Physicians, and which is described at length in the *Journal of Pathology and Bacteriology*, vol. iii. For previous literature, methods, and details of observations I refer to that journal. I venture to read this before this Society, as it is a subject with an application in clinical medicine.

The previous literature is extensive. The earliest writings are almost entirely confined to the description of oxalate of lime as found in urinary calculi. Later, the introduction of the use of the microscope into clinical medicine led to the recognition of the crystals of oxalate of lime, and of their frequency in the urine. This was soon followed by papers showing how a deposition of these crystals was frequently associated with certain disorders, especially certain disorders of the digestive system, and these led up to the recognition of that disordered state of the metabolism known as oxaluria. Chemical analysis of urine to study the excretion of oxalic acid is more recent, and has been adopted by physiological investigators only, being too long and tedious for purposes of clinical medicine.

These chemical and clinical observations referred to are of a most contradictory kind, and at present one is unable to make any inferences with certainty from the recognition of crystals of oxalate in urine.

My investigations were facilitated in three ways.

1. By having at my disposal a centrifugal machine, which enabled me to examine in a thorough manner the deposit of urine.

2. By adopting Dr Reoch's suggestion of adding alcohol to urine as a qualitative test for the presence of oxalic acid; for if oxalic acid is present in a urine, and alcohol be added, then there is always a precipitation of crystals of oxalate of lime.

3. By devising a new, and I trust accurate, method of estimating the amount of oxalic acid in urine.

In the earlier observations I used what is the generally accepted method of estimation, that of Neubauer, but with this the results were so uncertain and so contradictory that I was unable to formulate conclusions.

I shall consider, first, the frequency of excretion of oxalic acid in urine; second, the precipitation of oxalate of lime in urine; third, the source of the oxalic acid; fourth the amount excreted, and the cause of its variation; and fifth, the clinical condition called oxaluria.

1. *Frequency of Excretion of Oxalic Acid.*—Observation with the microscope shows that oxalic acid is frequently present in urine; this has been known for long. More recently the chemical analyses of Fürbringer and others have shown that it is almost constantly present; but as these analyses are very tedious, and the number of urines examined must necessarily be limited, such a general statement as that oxalic acid is constantly present can scarcely be concluded from them. I have examined a large number of urines qualitatively by Reoch's method, and as the result through the whole series was constant, I conclude that the urine of all men eating an ordinary mixed diet contains oxalic acid, and that consequently *oxalic acid is a normal and constant constituent of human urine.*

2. *Precipitation.*—Oxalic acid is found precipitated in urine as the calcium salt. This is generally described as appearing in two varieties of crystals, octohedral and dumb-bell.

That the octohedral crystals are genuine crystals of oxalate of lime is readily demonstrated; in urine they have the same solubilities as artificial crystals, and similar crystals can readily be produced by adding a soluble lime salt to a solution of oxalic acid.

Dumb-bell crystals essentially differ from these, as they cannot be artificially produced from pure solution of a lime salt and oxalic acid, and do not have the same solubilities as the artificial octohedral crystals, being soluble in acetic acid, and their solution being accompanied by effervescence. This last fact shows that these dumb-bell crystals are not oxalate crystals at all, but are crystals of carbonate.

The frequency of the occurrence of crystals of oxalate of lime in healthy urines has been studied and noted by Walshe, Galois, Bacon, and Smoler, and these four observers state the percentage of urines in which it occurs as 28, 36, 41, and 57. My own observations show this percentage to be 35. From these figures one can conclude that this precipitation occurs in at least one out of every three normal urines.

What the essential difference between urines depositing and those not depositing crystals of oxalate of lime is, has not previously been shown. All normal urines contain oxalic acid, and they all contain lime, which, of course, tends to precipitate it. Previous arguments and my own observations show that this precipitation is prevented partially or entirely by the presence of acid phosphate of soda, and possibly by the presence of other solvents. The difference between urines precipitating and those not precipitating may be either an excess of lime present, an excess of oxalic acid present, or a diminution of the solvent action of the urine.

That the precipitation is not due to variation in the amount of lime in the urine is evident from the fact that in all urines there is an excess of lime. This can readily be demonstrated by adding oxalic acid to any specimen of urine, as this always determines a precipitation of oxalate of lime crystals.

The earlier writers, without any direct observation, considered the precipitation as indicating an excessive excretion of oxalic acid, but this has more recently been denied by Fürbringer, who made a long series of estimations.

My observations do not corroborate the conclusion of Fürbringer, for on comparing the percentage of oxalic acid present in urines depositing and those not depositing oxalate of lime crystals I find a marked difference. In urines depositing the crystals I have found the average percentage of oxalic acid to be ·0025, while in those not depositing the crystals it is ·0010. My conclusion, therefore, is that a deposition of crystals of oxalate of lime shows an increased percentage of oxalic acid, and that if the total quantity of urine passed in twenty-four hours be of an average amount—over 1500 c. c.—then a precipitation indicates an increased excretion.

Whether or not variation of the solvent action of urine affects the frequency of this precipitation I cannot definitely say, but my observations show it is not such an important factor as the percentage of oxalic acid present. I gather this from the fact that out of a series of urines examined, nearly all of them with over ·0016 per cent. of oxalic acid deposited the crystals, and nearly all with less did not do so. The overlapping of the figures was so small that the effect of the variation of the solvent action cannot be great.

3. *Source of the Oxalic Acid.*—Earlier writers observed that eating certain vegetables determined a precipitation of oxalate of lime in the urine, and from this concluded that the food stuffs were the source of the oxalic acid. More recently, various theories have been advanced to show that oxalic acid might be produced in the metabolic changes of the proteids and carbohydrates, and the source at present is considered to be uncertain.

To investigate this point I examined the urines of patients who were restricted to a diet which was free from oxalic acid, as is the case when the diet is restricted to milk, and I found that this diet, if long enough continued, arrested the excretion of oxalic acid, and consequently conclude that the *oxalic acid in the food stuffs is the source of the oxalic acid in urine.* To corroborate this I carried my observations a stage further, by, after having observed the effect of the milk diet on patients and on myself, adding to it some tea, and in each instance this addition of tea, which contains oxalic acid, determined an excretion of oxalic acid in the urine.

4. *Amount of Daily Excretion and Factors influencing it.*—To state accurately what is the average daily excretion of oxalic acid is difficult, and is so because the daily quantity varies considerably, and also because the analyses are so long and tedious, each occupy-

ing about ten days, that the series from which the calculations are made are too short to give definite results.

Fürbringer, who used Neubauer's method of analysis, states it as being "something under ·020 grm."; he does not commit himself to an exact figure, but from his published figures, using only those previous to the administration of a drug, I calculate his average to be ·0055 grm.

From a series of thirty-five estimations I have found that the majority of urines contain between ·010 grm. and ·025 grm., and that the average of these was ·0172 grm. These estimations were made with my own method.

During my investigations I have found and studied two factors influencing the excretion of oxalic acid—these (1), the amount of oxalic acid swallowed; and (2), the acidity of the stomach contents.

(1.) That the amount of oxalic acid swallowed can do so is shown by the increased excretion which follows the administration of a soluble salt of oxalic acid. In one experiment, administration of potassium oxalate increased the daily excretion of oxalic acid from ·010 grm. to ·026 grm., and in another experiment from ·011 grm. to ·034 grm.

(2.) Acidity of the stomach contents. In the stomach the oxalic acid swallowed is in contact with lime salts derived from food and drinking water tending to precipitate it, and with acids, hydrochloric and lactic, tending to dissolve it, and thus render it in a condition favouring its absorption. In five cases I administered hydrochloric acid in sufficiently large doses to increase the acidity of the stomach, and in every case the average daily excretion of oxalic acid was increased by it; the average increases produced were ·0215, ·0095, ·0199, ·0129, and ·0100 grms. Lactic acid was twice given, and had a similar action, the average increase caused by it being ·010 and ·0021 grms.

That these two factors influence the excretion in the way they do corroborates the theory of the source of the oxalic acid in urine which I have supported.

5. "*Oxaluria.*"—By oxaluria I refer to the clinical condition described by Dr Begbie, not merely a subject whose urine deposits crystals of oxalate of lime, but one who, in addition to this, has the well-known combination of symptoms associated with the name oxaluria.

The symptoms of "oxaluria" are of four kinds,—(1.) Altered condition of urine. (2.) Pains. (3.) Dyspepsia. (4.) Nervous symptoms.

Condition of Urine.—There is only one constant change noted in the urine of all published cases, and that, of course, is the deposition of crystals of oxalate of lime. That this symptom alone is insufficient to enable one to diagnose any disordered condition of the system is evident from the frequency of the occurrence of these crystals in the urine of healthy subjects,—more than one urine out of three of healthy subjects depositing them. As stated earlier in this paper, I consider that a deposition of these crystals indicates an increased excretion of oxalic acid. But to what this increased excretion is due is not indicated by an examination of the urine.

Pains.—The principal ones are headache, pains in the region of the stomach, and pains in the lumbar region. The first two I shall consider when discussing the dyspeptic symptoms. The pains in the lumbar region are usually attributed to mechanical irritation set up by the passage of the crystals through the pelvis of the kidney and ureter; and with this I agree, as the crystals, though small, have exceedingly sharp angles, and observations on cholera patients, where the flow of urine is arrested or very much retarded, show that the deposition can take place as high up as in the urinary tubules. The pains in the lumbar region, then, give no indication of the pathology of the condition.

Dyspepsia.—This is a constant symptom in oxaluria, and is, I believe, the principal one. I do so for three reasons,—*First*, because in acid dyspepsia symptoms almost identical to those of "oxaluria" occur. In both there are pains in the region of the stomach, a feeling of fulness, acid eructations, and so on; and what is more conclusive is that such an authority as Hayem—*Leçons de Thérapeutique*—in describing acid dyspepsia describes as symptoms of that the typical pains met with in oxaluria, pains in the back, the sides, and the lower part of the lumbar region, and also describes the nervous symptoms similar to what are met with in "oxaluria." The symptomatology of the two conditions are so similar that, without examination of the urine, they cannot be distinguished. *Second*, because both acid dyspepsia and oxaluria are treated and relieved by the same means. Both are treated either by the administration of acid before food or by alkali after food. *Third*, because an artificially produced hyperacid condition of the stomach causes an increased excretion of oxalic acid. I have alluded to this earlier in this paper, when considering the factors which influence the excretion of oxalic acid. In my experiments acids were given in sufficiently large doses to increase the acidity of the stomach contents, and these markedly increased the excretion of oxalic acid.

That the increased excretion which occurs in oxaluria is due to increased absorption of oxalic acid contained in the food stuffs, and not from any other source, is shown by the fact that in oxaluria its excretion is arrested, or at all events greatly diminished, by restricting the patient's diet to a pure animal one. This has been demonstrated by Cantani; he adopted animal diet as a means of treatment, and by it alone freed the urine of oxalate crystals and gave relief from the lumbar pains.

Whether acid dyspepsia is a derangement of the stomach, as taught by Hayem, or a neurosis, as taught by Ewald, is immaterial in discussing the similarity of oxaluria and acid dyspepsia, for what can be the etiology of one can also be the etiology of the other.

Nervous symptoms met with in oxaluria might be explained in two ways,—by being due to an excess of oxalic acid in the system, or by being due to the dyspepsia which is present. I believe that it is to the latter that they are due, and do so because of their similarity. In both there is a similar headache, a neurasthenia, an irregularity of sleep, etc., so whatever can produce these in acid dyspepsia can also do so in "oxaluria." That they are not due to an accumulation of oxalic acid in the system is made evident by a consideration of the quantity of oxalic acid which is required to produce nervous symptoms, and comparing it to the quantity excreted in urine. Esbach, experimenting on himself, swallowed over two grammes of oxalic acid, and excreted during the following twenty-four hours ·181 grm.,—a quantity many times greater than what is found in urines depositing crystals of oxalate of lime, and he experienced no nervous phenomena at all.

These considerations of the symptoms of oxaluria show that it does not essentially differ from acid dyspepsia, excepting, perhaps, that the deposition of oxalate of lime in the urine occurs with more regularity. Crystals of oxalate of lime are frequently seen in healthy urine and in the urine of patients suffering from very varied diseases, and indicate no special disorder of the metabolism, consequently there are no grounds for separating oxaluria from other forms of acid dyspepsia. Patients who suffer from that combination of symptoms to which the name of oxaluria has been applied, whether their urines deposit oxalates or do not, should be recognised as suffering from acid dyspepsia, and should be treated accordingly.

Oxaluria is no pathological entity, and the recognition of oxalates in a urinary deposit has no diagnostic value.

Part Second.

REVIEWS.

The Life of Sir Henry Halford, Bart., G.C.H., M.D., F.R.S., President of the Royal College of Physicians, Physician to George III., George IV., William IV., and to Her Majesty Queen Victoria. By WILLIAM MUNK, M.D., F.S.A., Fellow, late Vice-President, of the Royal College of Physicians of London. London and New York: Longmans, Green, & Co.: 1895.

THIS is an exceedingly interesting and instructive biographical sketch of a member of our profession who won a very high place at Court and in society, who was the trusted physician and friend of three monarchs and of countless royal dukes and other personages. He made and spent a great deal of money; he was President of the Royal College of Physicians for twenty-five years, and fulfilled all the duties of his high office with marked ability and success. In a word, the highest prizes of his profession seemed easily and naturally to fall to his share at an early age, and he held them through a long and honoured life. Yet he was no genius in medicine or surgery. He wrote nothing beyond courtly and classic lectures and addresses. No step forward in diagnosis or therapeutics is associated with his name. He was never a teacher, and, so far as one can read in his biography, he owed his consultations to the confidence of the public rather than of the profession. He obviously had a great chance, of which he took full advantage.

Well-born of a family of Vaughans, which for generations had given distinguished representatives to all the learned professions, he had the additional good fortune of having a wise father, who knew that to give his sons a first-rate education was better for them than to save sufficiently to curse them with a small competence. His sons were educated at Rugby, and five of them received a complete University education,—the four elder at Oxford, the youngest at Cambridge. Not one of the five asked or received assistance from their father after their education was finished. John, Peter, Charles, and Edward all attained very considerable distinction in their several professions of law, diplomacy, and the Church. On quitting Oxford, Henry Vaughan came to Edinburgh to study, and learned much from Gregory's lectures and in the wards of the Royal Infirmary. Dr Munk makes a strange error when he states that the full medical curriculum comprised then, *as now*, three winter sessions,—five years, both winter and summer, are *now* nearer the mark. After graduating M.B. at Oxford in 1790, he began practice, first in Leicester, and then at Scarborough, and after a short but successful start in each place he went to London in the end of 1792, on the advice of Sir George Baker, the then President of the College of Physicians.

From the very first his progress was extremely rapid. Physician to the Middlesex Hospital within his first year, he was at once made Physician Extraordinary to the King. He attended the beautiful Duchess of Devonshire in her last illness, diagnosed correctly hepatic abscess, and rapidly attained the largest practice as a physician in England.

His fee-book shows that in his eleventh year of practice he made more than £5000, and in his eighteenth year he very nearly reached £10,000, at which figure, with occasional extra good years, it remained till 1837. In 1809 Dr Vaughan succeeded to the baronetcy of Halford and to the Wistow estates.

Now not only a Court physician but a county gentleman, Sir

Henry's life seemed one of uniform success and happiness, and his biographer gives most interesting details of his relations to the successive sovereigns, as whose confidential friend and adviser in many difficulties, changes, and trials he always succeeded in holding an honourable place. *Nemo omnibus horis sapit;* and once, in 1838, Sir Henry Halford made a grave mistake. An old friend and neighbour was travelling to Wistow with Sir Henry, and was seized with apoplexy in the railway carriage. At Tring he was removed to the station-house, and there Sir Henry left directions for his treatment, and proceeded on his journey to Wistow ! ! a want of sense, if not a want of heart, most astounding in a Court physician.

He died, aged 77, in 1844. The Life is most interesting, not only as a study of character and conduct which led to a great success, but also from the number of important historical characters with whom Sir Henry was in constant communication. He was present at the opening of the vault of King Charles I., and drew up a full report of what was seen when the coffin was opened. This MS. report was authenticated by the signature of the Prince Regent, and deposited in the British Museum.

Dr Munk has proved an excellent biographer, and the work is well arranged. The want of an index is compensated by a very full table of contents, and there are two excellent portraits of Sir Henry Halford at different ages.

Functional and Organic Diseases of the Stomach. By SYDNEY MARTIN, M.D., F.R.S., F.R.C.P., Assistant Physician and Assistant Professor of Clinical Medicine at University College Hospital, etc. Edinburgh and London: Young J. Pentland: 1895.

IN bringing out, as the fifth volume of his medical series, a work on the diseases of the stomach, by so well known a scientist as Dr Sydney Martin, the publisher has been well advised. Notwithstanding the great advances which have recently been made in this subject, no work which aspired to be a text-book on stomach complaints has appeared of late in this country. Those who wished to read up the subject were compelled to consult German authorities, either in the original or in translations. It is with some curiosity, therefore, that we read the book, partly to see if the native product could hope to vie with those of German origin, partly to see if the author could bring sufficient clinical experience to bear profitably on the subject. We may say at once that he has managed to write a book which, for clearness in arrangement, and for the ease with which its salient features may be grasped, compares more than favourably with the foreign text-books alluded to above. On the other hand, however, there are traces throughout the book of rather scanty acquaintance with the clinical aspect of the diseases treated of on the part of the author. The official nomenclature of diseases of the stomach is at present in a very tangled condition. Dr Martin makes a praiseworthy attempt to evolve order out of chaos. Instead of the numerous atonic, flatulent, acid and other forms of dyspepsia too numerous to mention, he simply divides stomach disorders, apart from those with gross organic lesions, into gastric irritation, gastric insufficiency, and gastritis, which is synonymous with gastric catarrh. Gastric insufficiency, which seems to be rather an unhappy term, includes all cases where there is loss of or diminution in function without the presence of any organic disease. In such cases the acidity due to hydrochloric acid is diminished, while that due to the acids of the fatty series may be increased. The reverse holds good for cases of gastric irritation. The descriptions of the different tests for the acids and other constituents of the stomach contents are good enough as far as they go, but they are too concise. And although the fact that hydrochloric acid combines with proteids is insisted on in an early part of the volume, in the description of one of the illustrative cases the total acidity is given as if it consisted solely of free acidity, which could not have been the case. Those parts of the book which are devoted to the consideration of treatment are the best, especially those in which diet is spoken of. We especially would call attention to the excellence of the paragraphs referring to rules to be observed in cases of dyspepsia with constipation.

A very careful summary of the foods to be avoided or taken in cases of gastric irritation and insufficiency is given in Chapter II.; and the author justly remarks that diet lists, rigidly drawn up, are seldom of much use, and that the physician must feel his way in all cases, being guided by the result of treatment. The chapter in which dilatation of the stomach is described is not nearly full enough. The causes are given in full, but the details of the symptoms are meagre, while the complications which sometimes arise are not mentioned.

The last two chapters treat of gastric ulcer and carcinoma, and here again, although the subject-matter is full of good points and the general treatment of the subject is excellent, several things are missed out or overlooked.

Taken as a whole, therefore, Dr Martin's book may be warmly commended. The descriptions are terse and vigorous, and are nicely put, but the entire work displays, as we said before, a lack of sufficient clinical experience on the part of the author. It is, however, well adapted to give readers, new to the recent researches, a very good idea of the subject as at present understood.

It is hardly necessary to state that the publisher has done his part of the work in the best style. The printing of the volume and of the illustrations leaves nothing to be desired.

A Smaller Atlas of Illustrations of Clinical Surgery, consisting of 136 *Plates, with Descriptive Letterpress.* By JONATHAN HUTCHINSON, LL.D., F.R.S., Consulting Surgeon to the London Hospital, and late President of the Royal College of Surgeons. London: West, Newman, & Co.: 1895.

FEW men indeed have so freely given to the world the results of large experience as has Mr Jonathan Hutchinson. Indefatigable in collecting items of medical lore, he has spared neither trouble nor expense in pictorially reproducing what can so be done. His *Illustrations of Clinical Surgery*, in two folio volumes, with copious annotations, have proved of inestimable value to many a teacher and student, and the elegantly bound and admirably illustrated octavo which he has just had published is a smaller and less expensive continuation. As a book of reference it has its chief utility, and furnishes a key wherewith to solve the puzzle of many a strange case. It deals, in fact, with too wide a range of subjects for detailed criticism. It will be found specially rich in examples of lupus,—a term, be it noted, employed by Mr Hutchinson to include various diseases not generally so classed. It shows how protean even classical lupus may be, while a study of the varieties here embraced leads to the mental inquiry, is a case necessarily lupus because it spreads peripherally, forms satellites, and leaves scars? Here are to be encountered drug eruptions of many sorts, peculiar nævoid conditions, forms of ichthyosis, of dermatitis, of cancer and sarcoma, besides numerous pathological pictures, as of gall-stones, arteritis, and bone deformities. The notes appended to each plate describe tersely its subject. Nearly all the figures have already appeared in the *Archives of Surgery*, but in this collected form can be more easily consulted.

Early Scoliosis, or Curable Curvatures of the Spine. By PERCY G. LEWIS, M.D., M.R.C S., L.S.A., A.K.C., Honorary Medical Officer to the Victoria Hospital, and Surgeon to St Andrew's Convalescent Hospital, Folkestone. London: John Bale & Son: 1895.

IN this little book Dr Lewis presents an admirably lucid and succinct account of his subject. After dealing very shortly but pointedly with the anatomical aspect of the condition, he goes on to speak of the causation, the pathology, and the evil results of curvature. He admits flat-foot and genu valgum as possible causes to be always kept in view; but at another place (p. 26) speaks of such conditions as disease of hip, knee, or ankle as producing secondary curvatures not to be confounded with scoliosis. As the mechanism of production of the cause seems to be the same in both, we fail to perceive why in the one case the spinal curve is secondary, and in the other a true scoliosis. In his remarks on diagnosis Dr Lewis does not, we think, sufficiently emphasize the real difficulty which may exist in making up the mind whether we have to deal with scoliosis or spinal caries, and yet a mistake here is fraught with great danger to the patient.

The description of the systematic method of examining these cases and getting a graphic record of them, so as definitely to localise the muscular fault and to observe the results of treatment, is wholly excellent.

In his treatment Dr Lewis is thoroughly practical and rational; in the early stage the use of general gymnastics is deprecated, and we think properly so. It is advised that special exercises shall be prescribed to influence the individual muscle or groups of muscles at fault, general gymnastics being reserved for a later stage, when these muscles have thus been strengthened. Dowd's machine is suggested as suitable for the purpose, and illustrations of its use are given.

Mechanical supports the author regards as wrong if the case is curable by exercise, and here again we cordially concur with him. When bony alterations have taken place he admits the use of such appliances.

Dr Lewis's book is worthy of careful study. It is commendably brief, and yet the treatment of the subject is comprehensive and vigorous, well calculated to fulfil the author's aim by enabling others rightly to discern and successfully to cope with the difficulties which these cases often present.

Transactions of the American Surgical Association, Vol. XII. Philadelphia: Wm. J. Dornan: 1894.

THE present volume of Transactions bears testimony, as those before it have done, to a high standard of work. The papers are, many of them, of much interest, and are on very various subjects.

Dr John Ashhurst, jr., writes on the Surgical Treatment of Empyæma; Dr Keene on Amputation of the entire Upper Extremity (a most interesting paper); Dr Coleny on the Treatment of Inoperable Malignant Tumours by the Toxines of Erysipelas and the Bacillus Prodigiosus; while the subject of the influence of the Streptococcus Erysipelatosus upon Local Tuberculosis is dealt with by Dr De Forest Willard.

The Surgery of the Kidneys and Ureters is also introduced by Dr Tiffany, Dr Weir, and Dr Fenger, and these papers gave rise to an interesting discussion. Other papers of interest cannot now be named, but the whole volume may be commended to the careful attention of surgeons as a suggestive record of good work. To Edinburgh readers this volume may have special interest lent to it by the papers contributed on "The Teaching of Surgery," by the Professor of Surgery in this University.

Notes on Surgery for Nurses. By JOSEPH BELL, M.D., F.R.C.S. Ed. Fourth Edition. Edinburgh: Oliver & Boyd: 1895.

THIS popular little book has passed into its fourth edition, which is thoroughly revised, and contains an additional chapter of General Advice to Nurses. A very clever staff-nurse once said to the present writer that during her time as a probationer "she read many books, but that the *Notes on Surgery* was the only one she seemed to remember." The book is written in a crisp and pleasant style, which impresses the facts on the mind. General principles are given, details when unnecessary are omitted, when important are fully considered. The additional chapter contains much sound advice which should be useful alike to the probationer and matron.

Möller's Operative Veterinary Surgery. Translated and Edited from the Second Enlarged and Improved Edition of 1894. By JNO. A. W. DOLLAR, M.R.C.V.S. Edinburgh: David Douglas: 1895.

MR DOLLAR has done a great service to veterinary science by this translation of Möller's *Surgery*, a work of more than European fame. The translator has done his work well, and undoubtedly the volume will have a wide circulation. It ought to be in the library of every member of the veterinary profession.

The Urine in Health and Disease, together with its Chemical Examination. By H. AUBREY HUSBAND, M.B. C.M. Third Edition. Edinburgh: E. & S. Livingstone: 1895.

THIS book, from its shape, seems to be meant for the pocket. As it has reached a third edition we suppose some students must use it, though the matter may be found in any text-book. In aiming at brevity, the author, in the description of the different methods, frequently falls into inaccuracy. Many of the plates look as if they had been drawn from memory, not from actual preparations.

De la Stérilité chez la Femme. Par le Dr AUVARD. Paris: L. Battaile et Cie., Editeurs: 1896.

DR AUVARD has succeeded in giving a certain degree of freshness to his work on the well-worn subject of sterility in women, its causes and treatment. Like all the books coming from this author's pen, the one under review is copiously illustrated by many rather clever schematic drawings of the conditions described. The work opens with a description of the female and male genital organs, and a statement of the most modern theories of impregnation, including a notice of artificial fecundation. A detailed account is then given of the causes of sterility, which are divided into three classes,—anatomical, functional, and general or vague. A needful caution is given by Dr Auvard when he says that, before embarking on a long or severe course of treatment directed towards the organs of the woman, it is always well to see that the fault does not lie in the man, for it is manifestly absurd to be dealing with flexions or stenoses in the case of a woman whose husband's spermatic fluid is destitute of spermatozoa. The information is well up to date, but the author is a little too generous in his acceptance of the many alleged causes of sterility; a small amount of critical discrimination would have given the reader a more correct notion of what are truths and what are only hypotheses in this matter. From one or two statements in the work it would seem that it is intended for the general public as well as the medical man; and whilst we are willing to admit that the subject is of immense importance to France at the present moment, when fears concerning depopulation are so much in the air, yet we do not think the desired object is likely to be effected thus. A copious bibliography is appended, but we fail to see why it and the index and table of contents should be printed on pink paper.

Saunders' Pocket Medical Formulary; with an Appendix containing Posological Tables; Formulæ and Doses for Hypodermic Medication; Poisons and their Antidotes; Diameters of the Female Pelvis and Fœtal Head; Obstetrical Table; Diet List for various Diseases; Materials and Drugs used in Antiseptic Surgery; Treatment of Asphyxia from Drowning; Surgical Remembrancer; Tables of Incompatibles; Eruptive Fevers; Weights and Measures, etc. By WILLIAM H. POWELL, M.D., Philadelphia, etc. Third Edition, Revised and Enlarged. London: Henry Kimpton: 1895.

LEARNED professors and consultants will not require this little book, and newly-fledged graduates in their omniscience and self-confidence will despise it and its readers; but the average man, who does not profess to know everything, and is often hurried and bustled, will find it is a very useful book to have in a corner of his study table. His mind is not always working at high pressure; even his memory is not always trustworthy, and his powers of calculation may be overtaxed; so it is not a bad thing to have at hand nicely arranged tables of dates, weights, measures, incompatibles, and so on, and so on. The posological table is alphabetically arranged, and gives the dose in grains and grammes. The bulk of the book consists in an enormous number of selected prescriptions, with names of authorities given to each, arranged under diseases, alphabetically ordered, and most conveniently indexed. The selection seems fairly good, and the quantities safe. Blank pages are left for insertion of new formulæ which have been successfully tested. No man need be ashamed of using this excellent book.

Materia Medica Tables, designed for the Use of Students. By A. HERBERT BUTCHER, L.R.C.P., L.R.C.S., Honorary Surgeon to Birkenhead Borough Hospital. Edinburgh : E. & S. Livingstone : 1895.

THE author tells us in the preface that these tables are mainly designed "as an assistance to the student in preparing for his examination." Whilst to some students such tables will be a great help, we doubt if in the great majority of cases students would find much advantage from them in preparing for their examinations.

In the Vegetable Materia Medica Tables the author shows that he is altogether at sea regarding the names of plants, especially when, and when not, to use capitals. In many cases the names of the natural orders are antiquated, and in several cases not accurate. The natural orders are arranged neither alphabetically nor according to any botanical authority with which we are acquainted. In Table XV. there are several errors, and others misleading. Aqua laurocerasi is stated to contain exactly ten times more hydrocyanic acid than it contains. The tables will require to be carefully revised.

Dental Materia Medica and Therapeutics. By JAMES STOCKEN, L.D.S. Eng., late Dental Surgeon to the National Dental Hospital. Fourth Edition. Revised by LESLIE M. STOCKEN, L.R.C.P., M.R.C.S., L.D.S., and J. O. BUTCHER, L.D.S. Eng., Assistant Dental Surgeon to Guy's Hospital. London : H. K. Lewis : 1895.

THIS is a work which should be in the possession of every dental student. It is well written, is brought quite up to date, and, moreover, is very concise.

Aids to the Analysis of Food and Drugs. By T. H. PEARMAN and C. G. MOOR, M.A., F.C.S., Members of the Society of Public Analysts. London : Baillière, Tindall, & Cox : 1895.

THIS book will be welcomed by public analysts and medical officers of health, and by the profession generally. It is an excellent compendium of the subject.

London Water Supply. By the late Col. Sir F. BOLTON, C.E. New Edition. By PHILIP A. SCRATCHLEY, M.A., Barrister-at-Law, Assoc. Inst. C.E. London : W. Clowes : 1895.

AT no juncture could the value of this treatise be more thoroughly appreciated than the present, when the question of questions for Londoners is their water supply. The numerous water companies are on their trial, and the one specially having to do with the East End fairly broke down during the continued frost of last winter, and a Commission is still sitting to determine the exact causes of the distress to which the inhabitants of this poor and populous district were exposed. This book may be regarded as a brief in favour of the water companies, who shelter themselves behind the unusual climatic difficulties they had to contend with, and also the fact that the ratepayers had no storage facilities in the shape of cisterns. This raises the wide question not only as regards the depth at which water-pipes should be laid, but also as to the necessity of householders putting themselves to the expense of providing themselves with cisterns when their water supply is on the constant system. Here in Edinburgh, as we have passed from the intermittent to the constant service, we have retained our cisterns, and therefore when from any cause, such as repair of pipes or unusual drought, when the city is put on a limited supply, we suffer comparatively little inconvenience. Our storage enables us to tide over till the water is again turned on, and hence we have suffered none of the sad scenes which, it must be said, disgrace the metropolis. With any system of service we hold cisterns are a necessity; and if so, like any other sanitary appliance, they demand the most careful scrutiny and attention.

It is a remarkable fact that during the recent water famine the death-rate of London did not rise, and the mortality from no disease attained unusual prominence.

Herbal Simples Approved for Modern Uses of Cure. By W. T. FERNIE, M.D. Bristol: John Wright & Co.: 1895.

THE author defines "Herbal Simple" as "any homely curative remedy consisting of one ingredient only, and that of a vegetable nature." This book contains much information concerning many of our native plants which have long been regarded as popular remedies. It is, however, a book more curious than useful.

Practical Chemistry. By STEVENSON MACADAM, Junr., F.I.C., F.C.S., School of Medicine, Surgeons' Hall. Edinburgh: Printed at the Darien Press: 1895.

WE are glad to see that this excellent work on *Practical Chemistry* has reached a second edition. Part I. is devoted to the theoretical matter required for the thorough understanding of the more practical work, and includes the general principles governing the testing for salts. Part II. deals with metallic oxides. Part III. deals with acid radicles. Part IV. deals with systematic testing, and contains a condensed selection of the most distinctive tests arranged in tabulated form. Part V. gives the principal decompositions which take place in the testing of salts. It is a book most suitable for students, and is sure to have a wide circulation. The arrangement is excellent, and we can confidently recommend it.

WRIGHT'S VISITING LISTS for 1896, published by John Wright & Co., Bristol, will be found very convenient for medical practitioners.

Part Third.

MEETINGS OF SOCIETIES.

MEDICO-CHIRURGICAL SOCIETY OF EDINBURGH.

SESSION LXXV.—MEETING II.

Wednesday, December 4, 1895.—Dr ARGYLL ROBERTSON, *President, in the Chair.*

I. ELECTION OF MEMBERS.

THE following gentlemen were elected Ordinary Members of the Society:—A. F. Wood, M.B., City Hospital; R. W. Inkster, M.D., 38 Montgomery Street; Andrew Balfour, M.B. C.M., 51 George Square; W. Leslie Mackenzie, M.A., M.D., Medical Officer of Health, Leith; John A. H. Duncan, M.B. C.M., 32 Morningside Drive.

II. EXHIBITION OF PATIENTS.

1. *Dr R. A. Lundie* described a boy, aged 13, who was brought under his notice about a year ago with a peculiar TUMOUR OF THE UPPER LIP. Dr Lundie showed photographs which, he said, gave a good idea of the appearance, especially the profile one, in which the patient looked as if he had a supernumerary nose or parrot's beak. It was a firm tumour, about equally distant from skin on outside and mucous membrane on inside. It was first noticed six months before, when about the size of a pea. It had grown steadily, at first slowly, later more rapidly. It was exactly in the middle line. Twelve months had elapsed since removal, and there was no recurrence. He showed the tumour. A wedge had been removed from the front below the skin surface for microscopic examination. Mr Stiles examined it, and reported that it was an endothelioma undergoing myxomatous degeneration, with here and there cartilaginous development. Sections of the tumour were shown under the microscope.

2. *Dr Allan Jamieson* showed a case of MORPHŒA, or circumscribed scleroderma, in which there was as yet no lardaceous deposit. Richard Law, aged 10 years, 73 Albert Street, was admitted to Ward 38, Royal Infirmary, on 22nd October 1895. He was well grown and healthy. Sixteen months before, a small pink spot appeared under the right eye, and

gradually increased in size. Other patches had shown themselves since. They were all of a violaceous tint, that under the eye being the deepest in colour. It extended from one side to the other of the lower eyelid, and was about half an inch deep. It faded entirely, but momentarily, on pressure. There were two rounded patches, the size of a shilling and a sixpence respectively, on the right side of the chin; two slight ones on the right side of the upper lip, one on the tragus of the ear of the same side, and there was a faint violaceous band stretching from thence along the jaw, losing itself imperceptibly in the cheek. All these appeared in the summer of this year. In one of the patches on the chin there was a brown pigmentary spot. There was no thickening of the skin, nor were there any subjective sensations. There was considerable thickening of the inferior turbinated bone, which was twice cauterised by Dr M'Bride. All the lesions were restricted to the area of skin supplied by the second and third branches of the fifth nerve. The only condition which at all resembled this was morphœa of a very superficial type, and similar patches had come under his notice associated with the ordinary ivory patches elsewhere. The full name and address of this boy are given to facilitate reference should the patches develop further in future.

III. Exhibition of Instruments.

1. *Mr Hodsdon* showed, for *Dr Felkin*, a new form of SAFETY-PIN, which he thought would meet with the approval of the members of the Society. He thought it avoided all the disadvantages of the ordinary safety-pins now in use. It was invented by Mr

FIG. I.

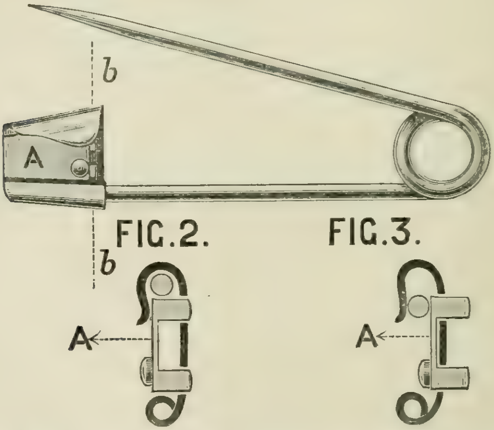

FIG. 2. FIG. 3.

A, Fig. 1, is a flat spring. Its forward end is bent at right angles with length of pin at line *b b*. This part forms the lock, and is shown in Fig. 2 with pin in catch. In Fig. 3 it is shown pressed aside, with pin passing inward or outward.

Robb of Kincardine O'Neil. To open the pin, simply press the little knob, which at once releases the sharp arm.

2. *Mr Stiles* showed a TRUSS FOR INFANTS, which he thought was an improvement on the trusses usually employed. A most useful truss in simple cases was the ordinary skein of worsted. It was comfortable, and the mother could take it off every two or three days and easily replace it. If the hernia was large, and the inguinal canal more patent than usual, it sometimes happened that the worsted truss did not suffice to keep up the rupture. In these circumstances they generally sent the patient to the instrument maker, and got him to make an ordinary spiral truss. In his experience, whenever the worsted truss failed, the ordinary spiral spring truss was almost sure to fail also. Great objections to the spiral truss were that an aggravated hernia required a strong spring to keep it up. After the child had worn it for a few days, it was found that a good deal of irritation was produced over the inguinal ring, and the truss was put aside by the mother on account of the pain it gave to the child. An infant would grow out of a truss in about three months. In the case he was about to show the child was circumcised, and an ordinary spiral truss ordered. The child began to wear it when seven weeks old. It soon became too small. A second truss, which the child wore for three or four months, failed to keep up the hernia satisfactorily. He had recommended a radical cure; but his friend Dr Hartley informed him about the pneumatic rubber truss, which often succeeded when the worsted truss failed. It consisted of a horseshoe-shaped air-bag placed around root of penis and scrotum with its concavity downwards, and attached below and around the pelvis with a rubber band. This truss had proved very satisfactory, having kept up the hernia continuously for a month.

IV. ORIGINAL COMMUNICATIONS.

1. *Dr J. C. Dunlop* read his paper on OXALURIA AND THE PHYSIOLOGICAL EXCRETION OF OXALIC ACID IN URINE, an abstract of which appears at page 634 of this Journal.

The President expressed the indebtedness of the Society to Dr Dunlop for his interesting account of his careful researches, comprising, as it did, an account of the symptoms associated with oxaluria, the sources of the oxalates, and the forms in which they appeared in the urine.

Dr Noël Paton said he spoke with some diffidence, not being a physician, at least not for the last six years; but he had taken a great deal of interest in the subject, owing to its bearing on the general chemistry of the body. The work had been done in the College of Physicians' Laboratory, and therefore he had had an opportunity of watching it in its progress. He thought the President had rightly expressed the indebtedness of the Society to Dr Dunlop for the very painstaking character of this research. It was difficult, perhaps, for the ordinary clinical physician to appreciate all the difficulties he had had to tackle. It had extended over two or three years, and he had met with many difficulties, and overcome them in an admirable manner,—*e.g.* the difficulty in separating the oxalic acid, and the difficulties arising from the imperfection of previous methods. There could be no doubt that he had shown quite clearly that the presence of oxalates in the urine was not due, as was still thought and still taught by many, to metabolic changes, changes of proteids, carbohydrates, and fats, as they occurred in the body. It was a point of very great importance that he had shown that these oxalates really came from the oxalates of the food. He had, in his (Dr Paton's) opinion, succeeded in exploding one of those clinical bubbles that were apt to last for many generations on account of the credulity of physicians. He meant to say that physicians were apt to accept the authority of such an observer as Begbie; and the admirable description he gave of the condition had predisposed physicians to make their cases fit his description rather than to investigate cases on their own basis. He believed most of the cases of oxaluria described had been cases of acid dyspepsia. Physicians had looked for and found oxalates, and called the case Begbie's oxaluria. Dr Dunlop had shown clearly that the symptoms were not due to oxalic acid poisoning, but were merely the symptoms of acid dyspepsia. He (Dr Paton) thought it a matter of great regret that in a School like their own more work of this kind was not done. Why should all the work on the diseases of metabolism come from Germany? Was it because their own men were taught to accept authority, or because their scientific training was not thorough? With more painstaking observations of this kind many advances in clinical medicine might be made. It was creditable that such a piece of work should have come from their Laboratory.

Dr Graham Brown said that he was sure they must all join in the congratulations that had been given to Dr Dunlop for the very admirable paper he had read them. He had put the case very strongly against oxaluria. Possessing, as he (Dr Brown) did, the natural credulity of the physician, he was disposed to stand up for his old friend oxaluria, and he did it on three grounds,—(1*st*), the congeries of symptoms Dr Dunlop had so admirably described; (2*nd*), that undoubted cases had occurred in which oxaluria and diabetes had alternated in the same case; and (3*rd*), on the ground, which was less satisfactory, but which was very interesting to himself, of certain recent experiments, where, in the case of dogs, respiration had been more or less interfered with by means of Sayre's applications to the thorax and abdomen; and where impeded respiration had been exactly followed by a great increase of oxalates in the urine. As the dog got more and more accustomed to its unusual respiratory position dyspnœa diminished, and so did the excretion of oxalates, which had reached its acme during the acme of the dyspnœa. He had not gone into the subject carefully; but he had always considered oxalate of lime in the body in these cases as being one of those intermediate products of metabolism which only appeared to a very slight extent in the urine in the form of oxalates, but the greater part of which underwent certain other changes, resulting chiefly in the breaking up into carbonic acid and water. If one's old theories were correct, it would be extremely interesting, in view of that experiment on dogs. These were the three main reasons that occurred to him at the moment for supporting oxaluria. He supposed there were others.

Dr Gillespie said that Dr Dunlop by giving vegetables, or by giving hydrochloric acid or other acids, increased the excretion of oxalates, or by giving a meat diet he could decrease it. He thought Dr Dunlop was rather dogmatic in his statement that in no other circumstances could they get oxalates in the urine. They knew that in Italy oxaluria was very common, and most of the work on oxaluria had been done in Italy, because the peasants there were largely vegetable-eating. In Germany they ate less vegetables. According to his reminiscences of Germany, the vegetables formed a comparatively small part of the diet. The German physicians did not recognise oxaluria at all (as a disease), and they stated that it was very uncommon there. Here it was fairly common, and also in America, according to Osler. Diet, therefore, must have something to do with it. A largely vegetable diet gave rise to considerable fermentation both in stomach and intestines. With a meat diet there was much less fermentation either in stomach or intestines. One German observer, Albu, ascribed oxaluria chiefly to intestinal fermentation, and, in fact, regarded it as one of the class of diseases known as auto-intoxications. Dr Dunlop said the symptoms were almost synonymous with those of acid dyspepsia, but he forgot to say which acid dyspepsia he meant. If he had said hydrochloric acid dyspepsia, they might have understood; but, on the other hand, they had lactic and acetic acid dyspepsia, in which hydrochloric acid was diminished. With increased hydrochloric acid they had the urine less acid; with diminution of hydrochloric acid and increase of the other acids they had the urine more acid. The symptoms of these two were quite different. What Dr Dunlop described was rather the acetic and lactic acid dyspepsia. Oxalic acid was a very simple body, and was formed artificially by the action of nitric and other acids on molasses and sugars. It might easily be formed from the starches, which were changed into sugars in the intestinal canal by the action of some of the acids there. Sugar might, by means of bacterial action, be transformed into oxalic acid. One of the German observers had maintained that proteids could be transformed into oxalic acid. There was also the action of cyanogen with water. From the ease, therefore, with which oxalic acid could be formed in the intestine, there might be fallacies affecting Dr Dunlop's work. Of course, all these criticisms had nothing to do with the fact that he could play on the oxalates in urine as he liked, increasing or diminishing them. The oxalates, however, might have other sources than those mentioned by him.

Dr James said that he had not intended speaking that night, but felt that he was bound to take up the cudgels in this matter. In several respects he might take up a position a little opposed to Dr Paton. Dr Paton had referred to the great difficulty of the research of which Dr Dunlop had given an account. Physicians knew another difficulty which Dr Paton had not mentioned, viz., getting patients to attend to instructions as to diet. The research was a very important one scientifically, and also from the clinical point of view, and they were all much indebted to Dr Dunlop. As a physician, however, he thought, with Dr Graham Brown and Dr Gillespie, that there might be sources of fallacy in connexion with the results. Was it the case that oxalates were derived entirely from the food, and in no case the result of tissue metabolism? He was one of those who still believed that they might be the result of tissue metabolism. They knew the close connexion of oxalic acid with uric and carbonic acid, and with fat, sugar, proteids, and so on, and that led them to believe that out of tissue metabolism they might have oxalates arising. It was true that with an animal diet or milk diet oxalates did not appear in the urine. But with animal diet or mixed diet it was quite possible that the dyspepsia, that faulty metabolism which might result in oxalates being formed, was got rid of. He would like Dr Dunlop to put an individual on milk diet for several days, and then induce in that individual acid dyspepsia. It would only be when he heard that that did not induce oxalates to appear in the urine that he would be disposed to accept entirely what they had been told that night.

Dr Stockman said that he thought Dr Dunlop had in one way fully proved his thesis,—namely, that taking a healthy man,—*e.g* himself or some patient in the Infirmary,—he managed, by giving certain diets containing a quantity of oxalates, or no oxalates at all, to free the urine from oxalate of lime, or to increase the quantity just as he pleased. Like Dr Graham Brown and Dr James, he doubted if Dr Dunlop was quite correct as to oxalic acid not being formed from sugar, starches, and such things in the intestinal canal. They all knew that oxalic acid was very easily formed outside the body from many articles of food. The point was that certain persons were said to excrete a large amount of oxalates in certain conditions. Dr Dunlop apparently had failed to get hold of a person of that kind, who could convert certain kinds of food into oxalates, and who suffered accordingly. Were he to make observations on a large number of people, he might come across a case which, on certain diets, would produce oxalates, and have low spirits and all the other symptoms he described. It was difficult to pitch on a number of cases so as to get positive results. Negative results were easy enough to get. He (Dr Stockman) thought far too much stress was laid on the presence of oxalate of lime crystals in the urine. With regard to what Dr Paton said about the physician he did not quite agree; but the microscopic examination of the urine for oxalate of lime crystals was quite insufficient to show the amount of oxalic acid in the urine. Dr Dunlop had told them there was always a certain quantity of oxalic acid, and that it was only deposited under certain conditions. Under certain conditions of the urine oxalate of lime crystals came down, and under others oxalate of lime remained in solution. There might be physicians who subjected the urine to quantitative chemical examination for oxalic acid, but hitherto he had not known them. They made a microscopic examination, which was absolutely no test. There might be oxalic acid present, or there might not be. The microscopic test merely showed that there was something in the urine which threw it down. A body which was present in 35 to 40 per cent. of all urines examined could not have any great significance as a symptom of disease. As a matter of fact, he found that normally there was an excretion of very small quantities of oxalic acid in a healthy man. Very often 2 or 3 grs. were given in cystitis and bladder conditions without, so far as he knew, producing any of the symptoms. So far as his experience went, he had never come across a case of oxaluria in the sense in which it had been understood by English physicians.

Dr Leith said he should like to say a few words on this question, although not specially concerned in it. He had followed Dr Dunlop's thesis with great care, and thought that he had exploded, he would not say the bubble, for he thought Dr Paton hardly put it correctly, and that he hardly gave the physicians the credit due to them. It was, of course, the work of Dr Begbie of their own town, also especially of Dr Golding Bird of England, who brought this question before them so very strongly, and drew apparently a perfect and complete picture of dyspepsia along with certain nervous symptoms, which apparently made a very good picture of the disease, and impressed the physicians so much that for a long time they were inclined to regard the identity of the disease as established. He rather thought that Dr Dunlop had not exploded, but dissipated the remains of the bubble. He thought the other questions as to the possible conversion of proteids into oxalic acid were extremely important; and it would be to Dr Dunlop's credit if the belief, which seemed to them natural and reasonable, that proteids were readily converted into urea and uric acid, and thus converted into oxalates, should turn out to be false. Perhaps Dr Dunlop required to do a little more before he thoroughly proved his thesis. He gathered from Dr Dunlop that the oxalic acid was excreted in the form in which it existed in the food. According to the tables, the amount taken was in excess of that excreted, so that some of it was absorbed. Dr Dunlop might investigate cases of a phthisical nature. These cases were shown to have a greatly increased quantity of oxalic acid, and also cases where imperfect assimilation was going on. The increased amount of oxalic acid was found to do no harm whatever. A greater amount had been found in phthisis than in cases of so-called "oxaluria." Perhaps the examination of such cases might throw further light on the question.

Dr Russell said he would like to add his word of praise to the words already spoken in commendation of Dr Dunlop's work. He was a somewhat credulous physician, but he was not sufficiently credulous to accept all laboratory work as a guide to the physician. He thought, however, Dr Dunlop had proved his thesis in so far as he could play on the oxalic acid secreted, and he had proved that it was very largely derived from vegetable food; but it seemed to him (Dr Russell) that there had been various misconceptions shown on this subject. In some of the recent works on medicine, some books even in the hands of students, they found merely a passing reference to oxaluria. It was largely exploded as a morbid entity. Then, further, when they were taught that there was a condition of oxaluria to which they ought to pay attention, it was also impressed on them that this oxaluria was associated with various gastro-intestinal disorders, with dyspepsias of various kinds; and this seemed to him the turning-point of the whole question, viz., first, whether in all acid dyspepsia there is a large deposit of oxalate of lime; whether there was not an abundant increase—he would not say of oxalic acid, because there was no satisfactory method of estimating it until Dr Dunlop introduced this admirable method of his own—of crystals of oxalate. These were not present in all bad acid dyspepsias, so that there must be special forms of disorders in which this great increase of oxalic acid was present, which was so prominent that it had led physicians to regard it as so far an entity, because associated with other very marked and somewhat characteristic symptoms. He thought the question which Dr James had submitted to Dr Dunlop was really a somewhat important one, viz., whether on a diet free from vegetables he might not be able to produce oxalic acid in the urine; and whether he could really exclude all the substances that had been mentioned as possible sources of oxalic acid, because he thought that in the present state of their knowledge it was exceedingly difficult to exclude all these processes from the gastro-intestinal tract when dyspepsia was present.

Dr Gillespie said that Dr Leith seemed to have taken him up wrongly as to proteids. He argued that a proteid diet was one which largely obviated and prevented sepsis or fermentation in the intestines, and might therefore diminish oxalates in the urine.

Dr Dunlop said he must first thank the Society for the very kind hearing and full discussion they had given his paper. Dr Graham Brown, after speaking of the symptoms, had mentioned the experiments of Reale and Bocri with Sayre's jackets. He (Dr Dunlop) had only seen an account of it occupying about half a page of a small journal, in which neither exact methods nor amounts were stated. A possible explanation was that the increased amount of oxalic acid was due to congestion of the alimentary tract, caused by dyspnœa, inducing increased absorption of oxalic acid already present. There was no evidence that oxalic acid was oxidised in the body. All the oxalic acid taken did not appear in the urine, simply because a great deal passed out in the fæces, which he had not analysed owing to the difficulty of the work. No amount of dyspnœa or interference with respiration had ever caused an accumulation of oxalic acid in the body; if it were so, oxalate of lime would have been produced, and solid oxalate of lime has never been found in the body. Dr Gillespie's view was that oxalic acid was produced by decomposition in the intestines. He (Dr Dunlop) considered that his experiment with milk diet quite proved the contrary. A milk diet stopped oxalic acid. Tea was given, and oxalic acid appeared. As regards the acidity of the urine in acid dyspepsia, well, all the statements which had been made were made from a percentage examination which was valueless. He must thank Dr James for putting patients at his disposal in the hospital. As to the further test proposed by Dr James of inducing acid dyspepsia after several days' milk diet, he was looking forward to an opportunity of applying it in Dr James's wards. Dr Stockman had spoken of finding extraordinary patients. He (Dr Dunlop) had not been able to do so. To give one an idea of the rarity of the condition, there had only been three cases of oxaluria in the Infirmary in the last three years. Acid phosphate of sodium did not precipitate oxalates, but was a solvent of them. Precipitation was due to increased percentage of oxalic acid present. Dr Leith had referred to Dr Golding Bird, who certainly gave a very full description of it; but the man who succeeded in bringing it prominently before the notice of the profession was Dr Begbie. Oxalic acid had been prepared from uric acid but not from urea. He (the speaker) believed that the amount of absorption was one of the principal factors affecting the amount of excretion. Dr Leith talked of the increase of oxalic acid in phthisis. Dr Cantani, of Naples, had worked at that point, and by a very large number of observations had shown that it was not so. He (Dr Dunlop) would certainly expect that a very large proportion of acid dyspeptics would deposit crystals of oxalate in the urine.

2. *Dr G. A. Gibson* read his paper on THE RESULTS OF SURGICAL MEASURES IN A SERIES OF CEREBRAL CASES, which will appear in a future number of this Journal.

The President said they had had a very interesting series of cases of cerebral surgery brought before them, and not the less interesting because it had been brought before them by a physician. These cases were interesting, not only to the physician and surgeon, but to the neurologist, oculist, and dentist—in fact, to all practitioners of medicine. He had no doubt they had been listened to with much interest. The hour was late, and he hoped that those who spoke would be as brief as possible.

Mr Caird said that this interesting series of cases strongly emphasized the position that every physician should take up, viz., that he should recognise how much aid he could obtain from the surgeon, especially if he were called early. One question of great interest was—how long might optic neuritis exist, and to what extent, and yet after removal of intra-cranial pressure by trephining return to the normal?

The President said he had seen several cases of very acute, thoroughly developed optic neuritis in patients suffering either from cerebral tumours or injuries, in whom operations had been performed relieving intra-cranial pressure, and with the result that very good, he might say perfect, vision had been restored in some instances. Whether perfect vision was restored or not depended on a variety of circumstances. One most particularly was the length of time it had existed; whether the inflammatory changes had gone on to such an extent as to induce atrophy of the optic nerve fibres. From that condition recovery could not be expected, but anything short of atrophic conditions might be recovered from in these cases. It was well known that there might be extensive optic neuritis with scarcely any perceptible diminution in vision, which arose from the circumstance that the impression which was found on the retina was accurately perceived by the retinal elements, and was conveyed to the brain, and there accurately perceived by the patient. This condition of affairs remained perfect so long as atrophic changes did not occur in the optic nerve. That was the condition on which the final result of the case depended. If the optic changes had advanced to a considerable extent, then only imperfect restoration of vision could be expected. But he could not give any definite statement as to when the atrophic changes occurred. That depended on the extent of the optic neuritis. Some cases of comparatively mild optic neuritis might run a prolonged course before giving rise to atrophic change, while others of a more acute severe type very soon produced the changes.

Dr Purves Stewart said he would like to call attention to the new symptom localising cerebellar lesions. All the localising symptoms had been hitherto associated only with the middle lobe of the cerebellum, which was its essential part. As they passed down the animal scale the lateral lobes became smaller, until in birds they disappeared. They would expect then most of the localising symptoms in affections of the middle lobe; but in the case to which Dr Gibson had referred, the tumour was successfully diagnosed in the lateral lobe, and that by means of a new symptom, viz., the fronto-cerebellar headache. The tumour was on the right side, and the headache in the left frontal region; and the reasons for giving the diagnosis were chiefly anatomical. The cerebellum had three sets of peduncles—inferior, middle, and superior. The inferior peduncles or restiform bodies connected the upper part of the middle lobe of the cerebellum with the nuclei of the posterior columns of the cord. Some of its fibres decussated as they passed downwards, others remained uncrossed. The middle peduncles of the cerebellum formed the transverse fibres of the pons, which were formerly considered to be mainly commissural, but more recently it had been shown that this was not so, but that the transverse fibres of the pons arose mostly in the cortex of the cerebellar hemispheres, and passed across the middle line to nerve cells in the pons, which cells, again, were connected with the various lobes of the cerebrum. Each superior cerebellar peduncle arose mainly in the interior of one dentate nucleus, but also in part from the cortex of the cerebellum, and especially from the lower part of the lateral lobe. Its fibres, when traced upwards, were found to decussate with those of the opposite side, between the corpora quadrigemina. Some of the fibres appeared to end in the red nucleus of the tegmentum of the opposite side, whilst other fibres passed this nucleus, and ran on to the frontal lobe of the opposite cerebral hemisphere, thus constituting a fronto-cerebellar tract. The question came up, which part of that long tract were they to fix the lesion in? The right labyrinthine deafness did not help them much, because there were two views as to the auditory path. One view was that it ran up in the tegmentum; others, on the contrary, *e.g.* Gowers, held that it ran through the cerebellum itself; but the patient had some paresis of the soft palate, some difficulty of swallowing, and some weakness of the vocal cords, which indicated pressure on the bulbar part of the spinal accessory, and that the lesion therefore was compressing the medulla, and that if it were in the superior peduncle it must be low in it. Mr Annandale cut down on the lower part, and removed a tumour of the size of a hen's egg from a position midway between the medulla and the side of the skull. Since the publication of this case he had obtained notes of another case with a similar symptom, but in which the diagnosis was not made, viz., that of a woman of about 50, with headache, vomiting, double optic neuritis, giddiness, exaggerated knee-jerks on both sides, and history of convulsions not accompanied by unconsciousness, beginning in right arm,—the patient going from bad to worse in spite of potassium iodide. The surgeon trephined over the left frontal region, and found nothing abnormal. The patient died two days afterwards, and post-mortem the tumour was found in the right lateral lobe of the cerebellum. He (Dr Stewart) had been in communication with Dr Risien Russell, and also with Dr Gowers, and they had been good enough to admit the feasibility of the hypothesis which had been advanced.

Dr Russell said he would like from the physician's side to express his very great admiration of the series of cases Dr Gibson had laid before them. These cases did not lend themselves to criticism, but were valuable as being one man's entire record—some eminently successful, others moderately, others not at all. That was the kind of record that they wanted there, and as a profession, both with reference to cerebral surgery and other things, and they did not always get it. He thought they might congratulate Dr Purves Stewart on having so early in his career discovered a symptom which, he was sure, they all hoped would be found reliable and useful in the diagnosis of those important cerebellar lesions.

Dr Gibson, in reply, said that there was very little for him to say, because the Society, with its usual generosity, had accepted the observations brought before them with characteristic kindliness. He had to thank the President for his observations on optic neuritis, which practically coincided with what he had in a much smaller way always seen; and he desired also to say how much he appreciated the remarks made by Dr Russell. He was one of the most ardent advocates of Dr Purves Stewart's views in regard to the anatomical aspect of the case to which he had specially referred, but he was of opinion that the diagnosis was founded on a sure basis, even if the symptom now for the first time described had been absent. It was, however, with much interest that he had followed Dr Purves Stewart in working out the details connected with the anatomical investigation of the symptom in question, and he felt sincere pleasure in having this occasion of congratulating him on the discovery of what promised to be a valuable aid to diagnosis.

OBSTETRICAL SOCIETY OF EDINBURGH.

SESSION LVII.—MEETING I.

Wednesday, 13*th November* 1895.—Dr A. H. FREELAND BARBOUR, *President, in the Chair.*

I. THE following gentlemen were elected Ordinary Fellows of the Society:—J. Hosack Fraser, M.D., Bridge of Allan; Stewart Grant Ogilvy, M.B. C.M., 12 Graham Street; T. Johnson-Alloway, M.D., 23 Mackay Street, Montreal; and Howard Morgan, M.B., 7 The Crescent, Birmingham.

II. *The Retiring President* (Dr A. H. F. Barbour) delivered his VALEDICTORY ADDRESS, which appears at page 585 of this Journal.

III. *Dr Ballantyne*, Dalkeith, in accepting office as President, thanked the Society for the honour, and at the same time proposed a vote of thanks to Dr Barbour for his address. This was seconded by *Prof. Simpson*, and carried unanimously.

IV. *Dr R. C. Buist*, Dundee, read the following NOTES ON A CASE OF ATRESIA VAGINÆ:—

The specimen was removed from the body of a single woman, aged 43. Of good family history (father, 72; mother, 55, after long illness, beginning in "typhoid"). There is no history of injury. In her sixteenth year she was thrice operated on for retained menses and swelling. In her thirtieth year she had pain in the left hypochondrium, and persistent looseness of the bowels, and she was never afterwards able to work. In her thirty-ninth year the looseness recurred, and never absolutely disappeared, though worse at times.

When I began to attend her in November 1894 she complained of weakness, giddiness, and pain in the left chest, radiating sometimes to the mamma and sometimes up the side of the head. She showed physical signs of anæmia, including cardiac murmurs, but no *bruit de diable*. The urine was normal, and she was said to menstruate regularly. She took very little food, and scarcely gained at all under tonic and stimulant treatment.

Jan. 5, 1895.—She to-day took a flooding so severe that she had simply to be wrapped up in a sheet and left. This had continued for three days, when I was sent for. Per rectum, I found the uterus not easily defined at the lower part, not tender, and not apparently enlarged. Menstruation was said to have been previously regular. Under ergotin, gr. 3, thrice daily at first, then every four hours, the bleeding was reduced but not removed, and, as she was getting very weak, on January 15 I attempted to make a vaginal examination, but could not effect an entrance.

Jan. 17.—Under chloroform, I found a line of apparently cicatricial tissue, about 2–3 cms. long, passing forwards from the posterior part of the vulva and ending at the posterior part of a small oval opening less than 1 cm. long. In the posterior half of this line was a dimple, into which I could not pass a probe. No separate urethral orifice was visible. The labia were normal. Thinking I had here the vaginal opening, I passed a director and slit the posterior wall of the opening back till I could pass my finger. On doing so I found that, after passing through a canal about 2 cms. long, the finger was in ovoid cavity with rugose walls. Nothing resembling a urethral eminence was felt anteriorly. With a second finger in the rectum, a wedge-shaped mass, apparently in the septum, was felt at the upper part, but no trace of a separate cervix uteri could be felt. Evidently, then, the cavity which I was exploring was the bladder, and the passage the urethra. As the patient threatened to collapse, further investigation was at that time impossible. After this she was in an almost typhic state for two or three days. She had incontinence of urine, and was fed with difficulty. Under forced feeding she recovered strength, and by January 30 she had again control of the urine, and the red discharge was becoming less. She continued to gain strength, and in March was able to get up; but on March 23 she fainted, and next day diarrhœa and tenesmus set in, and the diarrhœa proved very difficult to manage. She had no more hæmorrhage, but gradually lost strength again, though not so anæmic. In June she had severe headache and pain in left arm and shoulder. She had dimness of vision. Without definite sign of physical disease, she gradually sank again into a cataleptic and then typhic state, and died in August.

In the family history it is now of interest to note that her elder twin sister has borne a child, apparently normally.

An autopsy was made four days after death. Except slight enlargement of the kidneys and spleen, and old adhesions of the left lung to the pleura, no abnormality was found in head, thorax, or abdomen. The lower genito-urinary apparatus was removed for more detailed examination.

Between the dilated urethral orifice and the anus is a funnel-shaped area (spirit preparation has exaggerated this) ending in a dimple, through which a probe could be passed. This probe issued in the rectum, where we find on the anterior surface a groove 2 cms. long, ending in a dimple similar to that external, and forming the inner end of the canal through which the probe passes. On slitting up this canal we find on its anterior surface an indication of another passage passing in the direction of the vagina; this is, however, impervious. On opening the anterior wall of the bladder and urethra, we find the urethra 2½ cms. long, and on its under surface, 1 cm. inwards, we find a small deep pit almost at right angles to the line of the urethra, and crossed by two thin, flat strands of mucous membrane. The uterus is of normal consistency, somewhat unsymmetrical, as the body is considerably thicker on the right side than the left. Opening the posterior surface, we find that its cavity measures 7½ cms., and terminates in a small vagina with smooth walls. The cervix is slightly indicated anteriorly and laterally, but posteriorly there is seemingly no distinction between the uterine and vaginal surface. The vagina is 3 cms. long, and just below the cervix 3 cms. wide; it contracts to 1½ cms., and terminates in three small puckers. Through the central one a probe passes, and is found to issue in the urethra at the point described, below the strands of mucous membrane. The obstructed part of the vagina measures about 2 cms. The tubes and ovaries seem normal, but on the under surface of the left ovary is a small fish-bone attached by two fibrous bands. There are several strands of adhesion in the pouch of Douglas.

We have in this case probably a congenital obstruction of the vagina giving rise to hæmatocolpos, which, after cutting into the rectum, the surgeon relieved by making a vagino-urethral fistula through which the woman menstruated regularly, the position of the fistula halfway out the urethra allowing the discharge to go on apart from that of the urine. There are several cases similar to mine in Neugebauer's monograph, *Verwachsungen und Verengerungen der Scheide,* Case 547, Dieffenbach, resembling it closely in its surgical accidents, but the clinical interest seemed sufficient to make the specimen worth showing.

Prof. Simpson thought the Society was much indebted to Dr Buist for his interesting record of a rare gynecological case. It was seldom that the opportunity was obtained of dealing with cases of atresia vaginæ, and still more seldom that the history of the patient in later years was given. It was often extremely difficult to determine whether the menstrual accumulation due to closure of the vagina should be let out by tunnelling between the rectum and bladder, or be got at by a laparotomy. Sometimes it was necessary to open the cavities from both directions, because there might be accumulations in different parts of the genital canal, in the vaginal roof, in the uterus, or in the tubes, and the fluid might not be evacuated by an opening made from one direction alone. The presence of the bone below the right ovary made the case of itself quite unique.

Dr J. W. Ballantyne referred to an interesting case of congenital vaginal atresia reported by H. Hahn (*St Louis Med. and Surg. Journ.*, Nov. 1895) in which a vicarious menstruation took place from the bladder until an artificial vagina was formed, when the vesical hæmorrhage gradually ceased. The presence of the foreign body in the pelvis in Dr Brewis's specimen was interesting, and brought to his mind a case in which a needle (probably aspiratory) had been found in the pouch of Douglas; the specimen had been shown to the Society some years back by Dr J. D. Williams.

V. *Dr J. W. Ballantyne* read a paper on TERATOGENESIS, which appears at page 593 of this Journal.

The President proposed a vote of thanks for his interesting communication.

ROYAL MEDICAL SOCIETY.

Nov. 15.—Dr MacLean in the Chair.

Dr W. Macrae Taylor delivered his Presidential Address. He gave an account of the history of the Society. It began in 1734 as a select social gathering of a few students of medicine, and in 1737 it was permanently constituted. The meetings were at first held in a tavern; but in 1763 it obtained the use of a room in the Royal Infirmary, where it continued to meet for ten years. In 1775 the great Cullen, largely owing to his own efforts and those of John Gregory and Andrew Duncan, was enabled to lay the foundation stone of a hall on the site of the Royal College of Surgeons. This remained the home of the Society for nearly eighty years, after which it removed to its present abode. Some brilliant Presidents of former times were referred to,—*e.g.* Emmet, who forsook medicine for the bar and political life, became embroiled in the Irish rebellion, and died in exile; and Francis Foulke, who was shot through the heart in a duel near Leith. Many other interesting events were alluded to,—*e.g.* how Monro took advantage of the abundant clinical material afforded by the battle of Prestonpans to begin a regular course of clinical teaching; how the Society was refused a charter by the city of Edinburgh, but received one shortly afterwards from His Majesty George III.; how in 1783 it arraigned the *Evening Post* for that journal's gross misrepresentation of its debates. Dr Taylor concluded with an explanation of the methods by which the Society sought to attain its ends, emphasizing especially the library and the public business. Last session was, he said, the most prosperous financially that the Society had known for nearly twenty years.

Dr Taylor was accorded a hearty vote of thanks, proposed by *Dr Easterbrook*, and seconded by *Dr George Elder*, who remarked that to no one was the Society more indebted for its healthy condition than to Dr Taylor.

Dr Bowes showed a girl, aged 6 years, with Spastic Paraplegia. Dentition was delayed; and when a year old she had distinct convulsions, the fits all occurring within a fortnight. Then the legs became affected. At present she could not stand without support. There was flexion at hips and knees, and extension at ankles amounting to talipes equino-varus. On attempting rapid passive movement, the muscles were thrown into spasm. There was marked rigidity of adductors and exaggeration of knee-jerks.

Drs Watson and *Wishart* and *Messrs Williams* and *Thacker* spoke.

Dr Laing showed a specimen of Double Aneurism of the Arch of the Aorta, with heart and adjacent vessels attached. The aneurism nearest the heart was saccular, and contained firm laminated clot; the other, fusiform and with calcareous deposit on the walls, had ruptured into the right bronchus, thus causing death. The left ventricle was hypertrophied, and the aortic valves stenosed and incompetent. He had seen the patient two years previously in Dr Greenfield's ward, and there was at that time pulsation in the second right intercostal space, but no bruit. When called to see him lately, he found him suffering from laryngeal cough and expectorating blood-stained mucus, but could not detect abnormal pulsation. The fatal rupture occurred on the patient getting up suddenly to micturate, although warned not to do so. He was found lying on his face with blood pouring from the mouth.

Dr Elder said he had seen the case two years ago when resident with Dr Greenfield. Even then pressure on the bronchus was indicated by dulness, crepitations, and faint breathing at right base.

Drs Carmichael and *Wishart*, and *Messrs Williams, M'Pherson*, and *Blaikie* spoke.

Dr John Forbes showed the Stomach of a man, æt. 42, with Pyloric Carcinoma. The patient had also reducible left inguinal hernia and a discharging sinus in the left groin. He had the usual symptoms of pain and delayed vomiting. There was also some glycosuria. In March he weighed 9 st., and at the time of admission in October, 6 st. 7 lbs. The stomach extended to about an inch below the umbilicus. Dr Forbes, in making the post-mortem examination, thought he detected hard nodules in the pancreas.

Mr Ritchie recalled similar cases,—one in a man of 28, the other in a man of 27 years.

Messrs Ballantyne, Fletcher, Williams, and *Armour* also spoke.

Nov. 22.—Dr Simson in the Chair.

Dr Kenneth MacLean delivered his Presidential Address. He traced the rise and fall of Arabian Medicine, referring to the influence of Indian medicine upon it, and also more especially to its close connexion with the Greeks, and the translation by the Arabian physicians of many Greek works in medicine and philosophy. Arabian medicine flourished from the seventh to the twelfth century, but its influence extended to the seventeenth. Incidents in the lives of some of its famous physicians were mentioned, *e.g.* Ahrun, Rhazes, Avicenna, Avenzoar, and Averrhoes. Many of the quaint precepts quoted had their humorous side. Rhazes fell a victim to cataract. He asked the surgeon, who was about to operate, how many membranes the eye contained, and on his being unable to answer, bade him begone. The Arabians were more skilled in pharmacy and therapeutics than in anatomy or physiology.

Dr Hutchison, in proposing a vote of thanks, expressed the opinion that the history of medicine received too little attention in our own University. On the Continent special chairs were devoted to it.

Dr John Orr seconded, and the vote was carried with enthusiasm.

Dr W. C. Colman described a case of Acute Anterior Poliomyelitis in a boy æt. 4½ years, with cerebral symptoms, facial paralysis, and aphasia; and showed illustrative microscopic slides. The patient's mother had suffered from nervous debility, and the father from epilepsy. The patient had a convulsion fit, after which he was able to speak; but aphasia set in five hours later. There was left facial paralysis at the very first; but on the seventh day after the fit it had disappeared. The loss of power of articulation lasted until the sixth day,—speech, however, remaining thick for some days later. Receptive centres were not affected. There was snuffling breathing and some difficulty in retracting the tongue; also retraction of head, with occipital headache. By the tenth day paralysis was well marked, and all the cerebral symptoms gone. There was temporary tenderness of left shoulder and weakness of deltoid, which disappeared in five days; but tenderness of right calf persisted longer, and the right leg remained paralysed, with flaccid muscles and absence of knee-jerk.

Mr Bramwell was of opinion that in medullary cases death would often occur before diagnosis could be made, owing to affection of vital centres.

Dr Skirving cited examples of the disease occurring in adults.

Dr Waterston described two cases of Spinal Lesion. 1. Spinal injury in the upper dorsal region in a man aged 25. Shortly before admission he had fallen from a scaffold at the North Bridge, a distance of 35 ft., on to some logs and ashes. There was complete anæsthesia and paralysis below the third rib, pain and tenderness in upper dorsal region, but no irregularity of spines. His urine was drawn off at intervals. There was found next day anæsthesia on the ulnar side of both arms, extending over the three inner fingers (middle, ring, and little) and the exact half of the arm, the line of demarcation between the outer area of complete sensation and the inner one of anæsthesia being a straight line along both arms, and continued across the chest. The patient could move his wrist slightly, but not his fingers. He could pronate and supinate, could flex but not extend the elbow. Shoulder movements were unimpaired. Rectal and vesical reflexes were absent.

2. Spina Bifida, with Talipes and Perforating Ulcer of Foot, in a youth aged 17. About two years ago a sore formed on the outer side of left foot, and became gradually worse. In August 1894 two small pieces of bone were removed, with temporary improvement. Lately, however, the ulcer had been growing worse again. On admission there was double talipes, equino-varus on left side, more nearly equinus on right; a large, deep, unhealthy ulcer over left cuboid, and in front of it several sinuses leading down to bone. The feet were normal until three years ago, when talipes appeared in the right foot. The patient thought that the deformity of the left foot was due to his using crutches. On the back, over fourth and fifth lumbar vertebræ, there was a tumour of the size of a tomato, evidently a spina bifida. It was injected in his infancy. He had had some urinary incontinence at night.

Dr Carmichael, and *Messrs Williams, Crawford*, and *M'Kechnie* spoke.

Dr M'Carthy Morrogh described an interesting case of Gastric Ulcer in a woman aged 20, in which death took place from peritonitis following rupture.

The case was discussed by *Drs Skirving* and *Waterston*, *Messrs Williams, M'Nair Scott, Struthers, Ross, Chiene*, and *Rhodes*.

GLASGOW OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.

The following Office-bearers for the current session were elected at the first meeting of the Society, held in the Faculty Hall on October 23rd:—*Honorary President*, Sir John Williams, Bart., London; *President*, G. A. Turner, M.D.; *Senior Vice-President*, Malcolm Black, M.D.; *Junior Vice-President*, J. Nigel Stark, M.B.; *Treasurer*, Alex. Miller, L.R.C.P. & S.; *Secretary*, Robert Jardine, M.D.; *Reporting Secretary*, A. W. Russell, M.A., M.B.; *Pathologist*, John Lindsay, M.B.; *Members of Council*, Drs J. K. Kelly, Wm. Cullen, A. R. Gunn, T. W. Jenkins, H. C. Reid, J. M. Munro Kerr.

The *President* referred to the death of Dr Thomas Keith, one of the Honorary Fellows of the Society, and proposed that the following resolution be adopted and entered in the Minutes of the Society, and that an extract from the Minutes be transmitted by the Secretary to Mrs Keith:—

"*Glasgow, October* 23, 1895.

"Resolved,—That we desire to express our sincere regret at the great loss which our Society and the profession generally have sustained in the death of one of our Honorary Fellows, Dr Thomas Keith. We record our high admiration for him as a man, and as a noble example of what a physician should be. The work he did has placed his name in the forefront of the medical profession, and the fact that much of it was accomplished in great physical pain adds to our admiration for the man whose skill in alleviating the sufferings of others was only equalled by the fortitude with which he bore his own.

"We as a Society desire to convey our sincerest sympathy to Mrs Keith and family in their sad bereavement."

The *President* reported to the Society that since he read his paper on the Occurrence of Tetanus Neonatorum in the island of St Kilda (*vide Glasgow Medical Journal* for March 1895) antiseptic precautions have been observed in the dressing of the umbilical cord, and that the two children since born on the island have escaped an attack, and are still living.

Dr Malcolm Black showed an ANENCEPHALIC FŒTUS.

Prof. Murdoch Cameron read notes of a case of MYOMATA OF THE UTERUS complicated with pregnancy of five months' duration, for which he had performed the operation for extirpation of the uterus and removal of the tumours with a successful result. The following summary of the notes has been supplied by Dr J. M. Munro Kerr:—

Mrs C., æt. 36, has had no children and no miscarriages. Has always enjoyed the best of health. About eight years ago noticed, by accident, "a swelling" in the left iliac region. It was about the size of a hen's egg, but remained stationary, and caused her no trouble until she became pregnant in February of the present year. When she was first seen, on July 16th, the distension of abdomen was such as to suggest a pregnancy at full time. She was operated on on July 22nd, on account of the obstruction the tumours were causing to the bowels and the circulation in lower limbs. The whole of pelvis and left iliac and lumbar regions were occupied by the tumour masses, the uterus being displaced to right side of abdomen. The entire uterus and all the tumours were removed. The removed masses weighed 27 lbs.

Part Fourth.

PERISCOPE.

OCCASIONAL PERISCOPE OF DERMATOLOGY.

By W. Allan Jamieson, M.D., F.R.C.P. Ed., Physician for Diseases of the Skin, Edinburgh Royal Infirmary; Lecturer on Diseases of the Skin, Edinburgh School of Medicine; late Consulting Physician to the Edinburgh City Hospital for Infectious Disease.

Indelible Pigmented Patches Consecutive to an Erythema due to Antipyrin, recurring in the same Situations.—Morel-Lavallée states that he was consulted in 1893 by a young woman who was much annoyed at the persistence, on several parts of her body, of indelible coloured blotches, but of which the colour and size underwent, according to her, intermittent phases of increase, corresponding to strange, acute, and transitory eruptive phenomena. When first seen the seven patches were in a period of quiescence. The two most noticeable were on the neck; they were round, not prominent, purely macules, of a fawn-yellow, and anæsthetic. Some time after an erythematous outburst took place in all the patches alike, accompanied with smarting and unbearable itching. It was an urticarial erythema, resembling erysipelas. In five or six days the itching was gone, but the patch in front was now a purplish black, that behind quite black. The eruption on its appearance was somewhat like the infiltrated and swollen patches of vesicular eczema, but had an exact circular definition of contour inconsistent with that. The patches seemed to own the pressure of the stays and collar in determining their localization. While it was so far fixed that it recurred in the same situations, yet supplementary patches appeared also elsewhere. The outbursts appeared almost immediately after the contact of antipyrin, which she was in the habit of taking in 15 gr. doses from time to time, with the interior of the stomach. This is easily determined in persons with a keen sense of smell, by the peculiar empyreumatic odour perceived at the instant when a cachet or capsule of antipyrin breaks in the stomach after being swallowed. M. Brocq has already made an interesting communication on this result of the ingestion of antipyrin in some persons. Wickham and Baudoin related cases where, with the same intense itching, and the same rapidity of invasion, an eruption resembling erythema nodosum came on from the same cause. It is curious that antipyrin, on the contrary, often acts as an antipruritic.—*Annales de Dermat. et de Syph.*, April 1895.

A Remedy for Chilblains.—"Most practitioners," observes Professor Boeck of Christiania, "have their own formula for chilblains." The one he suggests is not elegant, but most effectual. Its composition is as follows:—

℞	Ichthyoli,		
	Resorcini,		
	Tannini, . . .	āā 1·00	
	Aquæ, . . .	5·00	M.

Signa.—To be painted on each evening.

When thus applied, the fluid in a few minutes forms a varnish on the skin, and causes to disappear not merely the chilblain, but also the diffuse œdematous swelling of the fingers and hands. In fact, the part acquires a wrinkled and shrunken appearance. The remedy has two inconveniences. One is, that not merely during the treatment, but for a week or fortnight, the parts so treated look black and dirty. The other is, that some persons cannot stand the application of resorcin to their skins, even in the combination given. This is, however, rare, especially if the parts are enveloped at night in salve muslin. Such should be done, indeed, in the case of all sensitive skins, else the treatment may give rise to hacks. The remedy is unsuitable in the case of broken chilblains. Where, in consequence of their employment, it is inadvisable so to stain the hands, the following may be substituted. It is similarly painted on at night.

℞	Resorcini, . .	2·00	
	Mucilag. acaciæ,		
	Aquæ, . . .	āā 5·00	
	Talci pulv., . .	1·00	M.

This has also proved very useful in the treatment of that troublesome and obstinate complaint known as "peeling lips." To do good it must be long and perseveringly used.—*Monatsh. f. prakt. Dermat.*, Hamburg, 15th August 1895.

Whale Oil (Oleum Physeteris s. Chænoceti) as a Salve Constituent, particularly in the Treatment of Acne Vulgaris.—Boeck, referring to the observations of Guldberg on whale oil, directs attention to the peculiar power of penetration which it possesses. But another remarkable property which it has does not seem to have been previously noticed. This is, that to a certain extent it restrains the vitality and growth of bacteria in the skin. This endowment he has specially endeavoured to make use of in the treatment of acne vulgaris, and not, as it appears to him, ineffectually. He uses the following formula:—

℞	Camphoræ,		
	Acidi salicylici,	āā 30·0–50·0	
	Sulph. præcip.,	10·0	
	Zinci oxidi,	2·0	
	Saponis medic.,	1·0	
	Ol. physeteris,	12·0	M. fiat ung.

This is applied every night, and in the morning is washed off with soap and water. The camphor is added to cover the unpleasant odour of the whale oil.—*Monatsh. f. prakt. Dermat.*, Hamburg, 1st September 1895.

ECZEMA OF THE GENITALS.—This form of eczema is, in the opinion of Dr Abbott Cantrell, one of the most disagreeable, annoying, and distressing conditions that can affect one. If the disease is in an acute state, of recent date, with intense redness, much inflammation, itching, and pain, he advises rest in bed for some days, lying on the back, and having the parts continually bathed with a saturated solution of boric acid. If the parts are a good deal swollen, so that the skin is thrown up into decided ridges, with oozing and crusting, he employs either the same lotion or black wash, and if steadily used they do not relieve rapidly enough, he adds an ointment of calomel, 10 to 30 grains in an ounce of zinc ointment. In still more chronic cases, with thickening, he uses one of 40 grains of salicylic acid in an ounce of vaseline kept applied. Aperients of magnesium sulphate given each morning are advantageous; the diet must be regulated, the parts kept cool, and as much exercise taken as he may desire.—*Philadelphia Polyclinic*, 25th August 1895.

CYSTICERCI IN THE HUMAN SKIN.—Lewin has drawn attention to this occurrence, which is not of extreme rarity. The cysticercus cellulosæ is the larval condition of a tænia which has its habitat in the small intestine, and whose eggs contain numerous embryos of future cysticerci. Infection can take place either directly from the ova of tæniæ in his own intestine, or indirectly from those from another. The auto-infection is denied by some, but Lewin reports a certain number of cases which show that the coincidence of the tænia solium and the cysticercus in the same person is not accidental. The symptoms arise slowly in the skin as the volume of the parasite increases. Those affected complain usually of sensory disturbances, of weariness and fatigue, accompanying movements of the parts implicated. The capillary hæmorrhages observed are due to a degeneration of the vascular walls. The mobility of the cysticercus embedded in the subcutaneous tissue, and surrounded by a connective tissue capsule, gives rise to an inflammatory reaction of a more or less marked type. The tumour formed by the cyst may either be prominent or not. It is round or oval, and of almost cartilaginous hardness. The parasite may be solitary, or present in numbers. Positive proof is obtained by extirpation, as for an atheroma. Cysticerci may be mistaken for numerous kinds of tumours, fibroma, molluscum, atheromata, boils, and abscesses. The determination of their presence in the skin has frequently a decisive importance for the diagnosis and treatment of diseases of internal organs. In particular, the diagnosis of cysticerci in the brain may be made from their discovery in the integument.—*Archiv f. Dermatol. d. Syph.*, 1894, pp. 71 and 217.

QUARTERLY PERISCOPE OF OPHTHALMOLOGY.

By William George Sym, M.D.

Eserin in Glaucoma.—Cohn concludes an article on this subject with the following general rules:—Every case of glaucoma should be treated early with eserin, as soon as the coloured rings are complained of. It is of use particularly in acute cases, in which if one can reduce the size of the pupil he will cut short the attack. Eserin never does any harm, and if pure may be continued for years without causing follicular irritative conjunctivitis; iritic adhesions produced by its use are few and slight, if present at all. Quoted in *Centralblatt für praktische Augenheilkunde*, June 1895, from *Berliner klinische Wochenschrift.*

Operation in Chronic Glaucoma.—In his introduction of the discussion at the meeting (1895) of the British Medical Association, on the question of operating in chronic glaucoma, Nettleship propounds the following statements:—(1.) Cases of optic atrophy occurring during the glaucoma period of life, in which there is distinct cupping of the disc, should be looked upon and treated as if the diagnosis of glaucoma were certain, even though the tension may not be increased. (2.) He is in favour of the performance of iridectomy even in those very disquieting cases in which the field of vision is cut off close to the fixation point. (3.) In simple glaucoma he is in favour of early operation rather than of waiting till there is little to lose. (4.) He operates even in the prodromal stage (unless under exceptional circumstances), more especially in the glaucoma of young persons.—*British Medical Journal*, October 19, 1895.

Colour-Vision Tests.—At the same meeting, Bickerton of Liverpool expressed great dissatisfaction at the attitude adopted by the Board of Trade in regard to the testing of the colour-vision, etc., of seafaring men; the most recent instance of importance being that the officials of that department, failing to perceive any probability that the Elbe-Crathie collision had anything whatever to do with defective sight, declined to institute a special examination of the look-out men in regard to that point, even when urged by him to do so. His somewhat bellicose paper has given offence to certain trade journals, notably the *Liverpool Journal of Commerce* (Aug. 23, 1895), which deals with the question in a very calm and able article, pointing out how Bickerton by going too far is apt to injure his own cause.[1] Both parties, however, agree in recommending for generous treatment by the Board of Trade such seamen as have been turned out of employment on account of failure to pass the colour-vision tests.—*British Medical Journal*, October 19, 1895.

CAUSE OF STRUMOUS OPHTHALMIA.—Norrie, of Copenhagen, finds in the presence of pediculi a frequent cause of strumous inflammations of conjunctiva, lids, and cornea. He thinks that it arises by the patient conveying to the eye on his finger bacteria which flourish in the portions of skin ruffled by his previous scratching.—*Centralblatt für praktische Augenheilkunde*, October 1895.

BLINDNESS FOLLOWING HEAD INJURY.—As the result of a severe injury to the skull, blindness of one or of both eyes, complete or partial, is occasionally found to arise. The cause is probably an actual tearing across of the optic nerve, or compression of it as it crosses the line of fracture, but in the (very rare) cases in which some improvement in vision takes place it may be a hæmorrhage into the intersheath space of the nerve. The ophthalmoscope shows a disc turning pale sooner or later, and the margins generally a little hazy and indistinct. [The retinal vessels are not always diminished in calibre.—W. G. S.]—Nettleship in *Ophthalmic Review*, April 1895.

INTERSTITIAL KERATITIS IN ACQUIRED SYPHILIS.—Trousseau considers that cases of interstitial keratitis from acquired syphilis are not perhaps so very rare as even those who admit that they do occasionally occur are disposed to think. The symptoms differ from those presented by the hereditary cases in that in the acquired form the course is shorter, milder, and less liable to leave evil traces behind; and that frequently only one eye is affected. He has, however, had one very bad case in which both eyes were long and dangerously affected in a boy of 8 years old, who became syphilized by his nurse. The usual time of occurrence is during the second year after infection. Mercurial treatment is of great value in the acquired cases.—*Annales d'Oculistique*, September 1895. Trantas of Constantinople relates a case occurring thirteen years after the primary infection in a man aged 53.—*Archives d'Ophtalmologie*, November 1895.

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[1] This not being the place for discussion, I refrain from expressing here any personal opinion on the question at issue.—W. G. S.

OCCASIONAL PERISCOPE OF SURGERY.

By Edwin G. Bull, M.B.

P. Reclus on a Case of Cocaine Poisoning.—The following experience, that of a French surgeon whose name Reclus thoughtfully withholds, is instructive. The surgeon in question was dealing with a case of prostatic enlargement, in which catheterism was painful. Though the patient was aged 72, the surgeon injected no less than 20 grammes of a 5 per cent. solution of cocaine into the urethra, and was astounded by soon after witnessing the patient's death with symptoms of poisoning. Reclus states that he, even for internal urethrotomy, never uses more than 4 cubic centimetres of a 1 per cent. cocaine solution (P. Reclus, *Bull. et mém. de la Soc. de Chir. de Paris,* t. xx. p. 276).—Reichel in *Centralblatt für Chir.*, 1895, 34.

Busse on the Healing of Aseptic Incised Wounds of the Human Skin.—The object of Busse's researches was to answer the following questions:—1. Whence arises the material by which adhesion of the wound margin is brought about? 2. What part in the healing process is played by the white corpuscles? 3. What part does the ground substance take in the tissue changes? Busse's results may be summed up in the following sentences:—1. Adhesion of wound margins is produced by direct oozing from those parts. The fibrinous meshwork which maintains the union arises from an alteration and softening of the tissue of the cutis. 2. The vascular endothelium and connective tissue corpuscles take part in the process by indirect nuclear division, whether they be active cells or non-protoplasmal elements of the ground substance. No considerable vascular formation takes place in the cutis before the end of the second day. 3. The so-called small-cell infiltration is produced by an increase of the pre-existing connective tissue cells, and by a retrograde transformation of the ground substance into nuclei and cells, not by an emigration of leucocytes from the blood. In this transformation the elastic fibres as well as the cement-giving fibrous bundles take part. 4. Some of the leucocyte-like elements arise from nuclei in which the chromatin substance is arranged in a particular manner. All these elements are capable of further development, and can take part in the final formation of cicatrix. 5. The ground substance of the cicatrix is not formed by the pouring out of a dead material by the cells, but by a direct transformation of cells into bundles of fibres (Busse, *Virchow's Archiv,* B. cxxxiv.).—Rinne in *Centralb. f. Chirurgie,* 1895, 32.

Manasse on Bony Nasal Polypi.—These have been but seldom described, and Manasse has found but one notice of the subject, whereas Zarnico records seven such cases. Manasse has found such polypi in four individuals, and in all this growth sprang from the middle turbinate. They showed a central bony tube with well-formed medullary cavity. The tube could be followed to the base of the growth, and was regarded by Manasse as a hyperplastic formation of the turbinate periosteum (Manasse, *Virchow's Archiv*, B. cxxxiii.). Rinne in *Centralb. f. Chirurgie*, 1895, 32.

FIRKET ON RACEMOSE CYSTICERCUS OF THE WALL OF THE HEART.—A man aged 63 died of broncho-pneumonia. He had never had any cardiac symptoms. At the autopsy there was found an irregular branched sac in the posterior wall of the heart muscle, immediately behind the left border. It was 2 cms. in its largest diameter, and was found to be a cysticercus cellulosæ. The sac was not closely adherent to the cardiac tissue, and was easily drawn out with forceps. About thirty cases of cysticercus cellulosæ have been recorded, most of which were located in the cranial cavity. Under certain circumstances such a case might require surgical interference (Firket, *Bull. de l'Acad. royale de méd. de Belgique*, 1895, t. ix., No. 3.), E. Fischer in *Centralblatt für Chirurgie*, 1895, 32.

ROUX ON HÆMORRHOIDS.—After full dilatation of the gut by the "American method," Roux injects each pile with two drops of a 50-80 per cent. solution of phenol in glycerine. During and for a few seconds after the injection the base of each pile is compressed with the fingers. Roux finds that cases so treated do better than after the ordinary cutting operations (Roux, *Therap. Monatshefte*, 1895, No. 9.) Willemer in *Centralb. für Chir.*, 1895, 33.

A. POUSSON AND C. LIGALAS ON VESICAL ABSORPTION.—It is generally assumed that the bladder is impermeable to toxic or medicinal substances so long as its epithelium is intact, but that such substances pass into the circulation as soon as the epithelium becomes altered. Bazy, after certain experiments on animals, came to the conclusion that the healthy bladder possessed this absorbent power, whilst lately Boyer and Guinard came to the opposite opinion. To clear the question up, Pousson and Ligalas have undertaken certain experiments on men direct. They injected solutions of salts of lithium into the bladder, the smallest traces of which in the blood or saliva can be demonstrated by the spectroscope. An elastic catheter was carefully introduced, so that the eye of the instrument only penetrated a few millimetres beyond the internal meatus; the urine was drawn off, and a quantity of a 3-4 per cent. solution of lithium bromide sufficient to distend the viscus was injected. The instrument was kept in position, and the patient remained absolutely quiet till the conclusion of the experiment, one to two hours. During this time the patient chewed pieces of india-rubber to produce a copious flow of saliva, and of this, as well as of the blood from the finger, samples were taken. Four individuals were experimented with; three had healthy bladders, the fourth suffered from cystitis. In the first and second cases the solution remained 1½ hours in the bladder, and the patient had no inclination to pass water. No trace of lithium was found. The third patient desired to urinate in the last half hour. Analysis showed the presence of lithium in both blood and saliva. In the fourth case there were clear spectroscopic traces of lithium at the end of one hour. Pousson and Ligalas conclude from Experiments 1 and 2 that the normal vesical epithelium is impermeable, from Nos. 3 and 4 that absorption took place,—in No. 3 because the patient, though possessing a healthy bladder, had a desire to pass water and the urine gained access to the prostatic urethra, and in No. 4 because the vesical epithelium had undergone morbid changes (A. Pousson and C. Ligalas, *Compt. rend. de l'Acad. des Sci.*, 1895, 16).—A. Henry in *Centralb. für Chirurgie*, 1895, 31.

Part Fifth.

MEDICAL NEWS.

Royal College of Surgeons of Edinburgh.—The following gentlemen, having passed the requisite Examination, have been elected Fellows of the College:—Leonard Watkins Bickle, L.R.C.P. Lond. and M.R.C S. Eng., Mount Barker, South Australia; Ernest George Fortune, M.B. C.M. Edin., Demonstrator of Surgery, University of Edinburgh, 20 Chalmers Street, Edinburgh; Arthur William Hall, L.R.C.P. & S. Edin. and L.F.P. & S. Glasg., Scopwick, near Lincoln; Frederick Maurice Graham, L.R.C.P. & S. Edin. and L.F.P. & S. Glasg., Resident Medical Officer, Cowgate Dispensary, Edinburgh; John Laird Yuill, M.B. C.M. Glasg., Burnbank Road, Hamilton; Thomas Howard Morgan, M.B. C.M. Edin., Consulting Surgeon, Glympie Hospital, Queensland; Thomas Bernard Kelly, L.R C.P. & S. Edin., House Surgeon, Eye Hospital, Lower Mandlin Street, Bristol; William John Chichele Nourse, L.R.C.P. & S. Edin. and L.S.A. Lond., Honorary Surgeon, Holloway and North Islington Dispensary, 26 Parkhurst Road, London, N.; Arnold Samuel Ferguson, M.R.C.S. Eng. and L.R.C.P. Lond., 1 Lansdowne Place, Guildford Street, London, W.C.; Frederick Thomas Anderson, L.R.C.P. & S. Edin., 20 Inverleith Row, Edinburgh; Alexander Kennedy Melville, L.R.C.P. & S. Edin., M.D. and C.M. Edin., 35 Mayfield Gardens, Edinburgh, Gerald Chetwynd Algernon Moir, M R.C.S. Eng. and L.R.C.P. Lond., Assistant Surgeon, St Paul's Eye and Ear Hospital, 35 Merton Road, Bootle, Liverpool; William Augustus Bonney, M.R.C.S. Eng., L.S.A. Lond., L.R.C.P. Edin., M.D. Brussels, 100 Elmpark Gardens, London, S.W. The Bathgate Memorial Prize, awarded annually after a special written examination in materia medica and therapeutics, and open to all students who have taken their course of materia medica at the School of Medicine of the Royal Colleges, and who have passed in the Second Examination under the old Regulations or the Third Examination under the new Regulations of the Triple Qualification, was, at a meeting of the College held yesterday, presented to the successful candidate, Mr Patrick Pearse, 1 Argyle Place.

In the *Australian Medical Gazette,* July 1895, Dr W. C. C. MacDonald has an interesting paper on snake bites. He does not approve of treating the cases with strychnine, for in those of really poisonous snake bites the patients are exceedingly tolerant of the drug, and in cases of pseudo-poisoning large doses may cause dangerous or even fatal results. In treating snake bites he employs ligature, scarification, and sucking the wound vigorously, and he strongly asserts that sucking the wound is perfectly safe. He calls attention to the need of good diagnosis. The bite of a really dangerous nature presents two fang marks and marks of the teeth in the snake's lower jaw. The wound presents a chewed appearance, and it is distinctly œdematous, with more or less swelling; ecchymosis, too, is often present. There is also a continuous weeping from the fang punctures, and should the bite be deep, and from a large snake, blood never ceases to flow. The œdema is a very marked symptom, and is probably due to the direct action of the poison on the immediately surrounding tissue. If a snake does not get a good hold, Dr MacDonald does not think that the bite can prove fatal.

In the *Indian Medical Record*, August 1895, Dr R. P. Banerji publishes the following note on how strychnine and cobra poison act on the cobra:—"In March 1893 I went through a series of control experiments with strychnine and cobra venom on different kinds of snakes, said to be poisonous, with the following results:—(1.) Crotalidæ (native of India varieties only) and Viperidæ were immune to cobra poison. (2.) Najidæ and Bungaridæ were not immune to viper poison, but immune to crotalidian poison. (3.) Cobra (in all its varieties) was immune to strychnine. (4.) Crotalideans were not immune to strychnine. (5.) Viperidæ, though easily tetanized by strychnine, were yet safe. (6.) Varindæ, doubtful. V. Griscus and V. Hardwickii were immune to cobra and strychnine poison. They are considered by the natives of India more deadly than the cobra. Other species were not immune to any snake poison or strychnine."

In the same number of the *Indian Medical Record,* Dr Banjeri writes as follows, showing that, in India, Pasteur is antedated:—"I have to state that it is the practice in Upper India as well as in cases of mad dog bite, the dog is killed, its ear is pricked and some blood is obtained, and the person bitten has to take this blood with a little powdered black pepper. Again, I observed among the Pathans, Beloochees, Brahnis, and Murrees, when in South Afghanistan—1882 to 1889—that in cases of dog bites, instead of the blood of the killed animal, the lower portion of the medulla oblongata (called *húkhâ*) is taken out and rendered into a pulp, up with rice water (*conjee*), and the persons bitten are made this, morning and evening, for three days. It is said to cause one to be immune from rabies. I personally never saw it done, but the general opinion was that this was the only cure at their disposal. This is also suggestive of more experiments in this direction."

THE Cape of Good Hope Leprosy Commission has issued its final Report. The general conclusions and recommendations it has come to are briefly as follows:—The Commissioners affirm that leprosy is a source of danger to the health of the people in the Colony. It has steadily increased, and the class of people mainly afflicted with it are those who, from their personal habits and hygienic surroundings, are likely to further the spread of the malady. The Commissioners are therefore of opinion that the existence and spread of leprosy call for such legislative action as will enable the Government to safeguard the interests of the whole community. Leprosy is communicable from the diseased to the healthy, and there is not sufficient evidence to show that it is ever produced in any other way. Its spread is favoured by unfavourable hygienic conditions, such as overcrowding, uncleanly habits, unhealthy food, and poverty. Leprosy is, in some cases, spontaneously arrested in longer or shorter periods, and in a very small proportion of cases it would appear that this arrest is permanent. There is no specific sign by which arrest can be recognised; but the healing of ulcers, the loss of limbs, a quiescent state of skin, a general appearance of good health, increase of weight, and the absence of any indication of active disease, external or internal, for a period of two years, may be regarded, for all practical purposes, as arrest of the disease. There is no proof of the direct hereditary transmission of leprosy. Conjugal intercourse may be permitted to lepers past the childbearing age. It should be discouraged, in every possible way, between lepers at an early period of life. Conjugal intercourse between the leprous and healthy should not be permitted. No proof regarding the duration of the period of incubation has been obtained. The Commissioners are of opinion that the compulsory segregation of persons suffering from leprosy is the only practicable way of effectually arresting the spread of and eradicating the disease, and that no other efforts exist by which the spread of the disease may be effectually arrested. In the event of leprosy being extinguished or diminished in the colony, there is a danger of its being imported from other states or countries, and they would recommend that the disease be compulsorily notified in all bills of health. The notification of leprosy should be compulsorily enforced by legislation. No leper can be allowed, under any circumstances, to remain at large, except under definite conditions and regulations. All persons suffering from leprosy should be prohibited by law from following such occupations as would be attended with risk to the public. The Commissioners attach great importance to general measures of hygiene in dealing with the spread of leprosy, and they are of opinion that the vigorous enforcement of sanitary regulations would materially aid in checking the spread of the disease. Efforts should be made throughout the whole colony to educate the people to the importance of hygiene and the dangers of contagion, and steps should be taken in the educational institutions of the colony to instruct pupils in the principles of health and sanitation. The Commission strongly affirms the necessity of the study of leprosy, from its pathological and bacteriological aspects, being inaugurated in South Africa, and considers that the medical officers of the leper institutions ought to have facilities granted to them for such study; and submit, that there being a Bacteriological Institute in the colony, arrangements should be made whereby the medical officers of the leper institutions may attend there for short periods, during which assistance and instruction in the use of modern methods of research may be given them by the director of the staff of the Institute mentioned. The Report is signed by Drs. C. F. K. Murray, chairman; A. Edington, W. J. Dodds, C. L. Herman, J. M. Hoffman, F. Fismer, and J. B. Greathead.

PEPTONE OF BEEF.—Liebig's Company have sent us a sample of their Peptone of Beef, which we can thoroughly recommend as very nutritious and most agreeable to the palate.

PERFECTED WYETH BEEF JUICE.—We have received from Burroughs, Wellcome, & Co. a sample of the "Perfected Wyeth Beef Juice," and have found it an excellent preparation.

ANTIKAMNIA.—This is one of the many coal-tar products which have lately been introduced into medicine. This one has been recommended by American physicians. In doses of 3 to 10 grains it appears to act as a speedy and effective antipyretic and analgesic.

NUTROA FOOD.—We have received from the manufacturers a sample of this Food, and find it very nutritious, and one deserving to be extensively used for invalids and infants.

OBITUARY.

WILLIAM MARTINE, M.D.

EAST LOTHIAN has lost one of its best known and best liked practitioners. Dr Martine of Haddington was one of those country doctors who do honour to their profession. He was a most successful practitioner, much respected by all who knew him, and greatly beloved by his patients.

The country doctor needs to know everything, because he has to treat everything. Many, however, on account of the constant and urgent demands on their time, are rather apt to forget too much. Dr Martine was not one of these. He always had a great love for his profession, and kept up his knowledge of its various branches by reading and by intercourse with the leading professional men in Edinburgh, with many of whom he was on terms of intimate personal friendship. His reading was not confined, as is the case with some busy doctors, to periodicals; he also had usually on hand some standard work, which he carefully studied. In this way up to the last he kept himself fairly abreast of the medical literature of the day, and consequently was a most successful practitioner and a thoroughly reliable adviser. He took a special interest in his midwifery practice. He is said to have attended nearly 2500 confinements, and to have had an exceptionally favourable record. He was a very careful and exact man, and his case-book was a model of neatness and completeness.

Dr Martine held many appointments in his county, and practised over a very wide district. He took an interest in all public matters, was a keen antiquarian, and had a valuable collection of coins and other relics.

He was ever kind and considerate to the poor as well as to the rich, and will be much missed by a wide circle of friends and patients.

Dr Martine was born in Haddington in 1827. He graduated in Edinburgh in 1848, and started in practice in Haddington the following year. He was first associated with the late Dr Lorimer.

Three years ago Dr Martine lost his wife, and his friends think that he never quite recovered the shock. About six months ago his health showed decided indications of giving way; but his last illness was short, for he was visiting a few of his patients three weeks before his death, which took place on the 12th December 1895. He was, therefore, in his 69th year, and had practised for forty-six years in his native town.

He is succeeded by his son, Dr W. R. Martine.

PUBLICATIONS RECEIVED.

Alphabetical List of Abbreviations of Titles of Medical Periodicals employed in the Index-Catalogue of the Library of the Surgeon-General's Office, United States Army, Washington, 1895.

Joseph Bell, M.D., F.R.C.S. Ed.,—Notes on Surgery for Nurses. Fourth Edition. Oliver & Boyd, Edin., 1895.

Bernard E. Brodhurst, F.R.C.S.,—Observations on Congenital Dislocation of the Hip. Second Edition. J. & A. Churchill, Lond., 1895.

Burroughs. Wellcome. & Co.'s A B C Chemist's Vest Pocket Diary for 1896.

Burroughs. Wellcome, & Co's. A B C Medical Diary for 1896.

British Guiana Medical Annual and Hospital Reports. Edited by J. S. Wallbridge and C. W. Daniels. Demarara, 1895.

Sir James Crichton-Browne, M.D., LL.D., F.R.S.,—The Cavendish Lecture—On Dreamy Mental States. Baillière, Tindall, & Cox, Lond., 1895.

Charles J. Cullingworth, M.D., etc.,—Clinical Illustrations of the Diseases of the Fallopian Tubes and of Tubal Gestation. Rivington, Percival, & Co., Lond., 1895.

A. C. Dutt, B.A., M.B.,—Health Notes

for the Seaside. Horne & Son, Whitby, 1895.

Prof. **Edward Fawcett**, M.B. C.M. Ed.,—On the Localization of the Foramina at the Base of the Skull. J. W. Arrowsmith, Bristol.

Guy's Hospital Reports. Edited by E. C. Perry, M.A., M.D., and W. H. A. Jacobson, M.A., M.Ch. Vol. 51. J. & A. Churchill, Lond., 1895.

W. M. **Haffkine**,—Anti-Cholera Inoculation. Report to the Government of India. Thacker, Spink, & Co., Calcutta, 1895.

Vincent D. Harris, M.D. Lond. and **Edwin C. Beale**, M.A., M.B. Cantab.,—The Treatment of Pulmonary Consumption. H. K. Lewis, Lond., 1895.

G. **Carl Huber**, M.D.,—Directions for Work in the Histological Laboratory. Second Edition. George Wahr, Michigan, U.S.A.

Prof. **James Nevins Hyde**, A.M., M.D., and **Frank H. Montgomery**, M.D.,—A Manual of Syphilis and the Venereal Diseases. W. B. Saunders, Philadelphia, 1895.

Index-Catalogue of the Library of the Surgeon-General's Office, United States Army. Vol. XVI. Washington, 1895.

Prof. E. **Fletcher Ingals**, A.M., M.D.,—Diseases of the Chest, Throat, and Nasal Cavities. Third Edition. Henry Kimpton and Hirschfeld Bros., Lond.

Prof. A. F. A. **King**, A.M., M.D.,—A Manual of Obstetrics. Sixth Edition. Henry Kimpton, Lond., 1895.

James Knight, M.A., B.Sc,, F.C.S., F.G.S.,—Food and its Functions: A Text-Book for Students of Cookery. Blackie & Son, Limited, London, Glasgow, and Dublin, 1895.

Robert Lindsay, A.M., M.B., F.R.C.S.E.,—An Essay on Malaria and its Consequences. H. K. Lewis, London, 1895.

Jean Massart and **Emile Vandervelde**,—Parasitism: Organic and Social. Translated by Wm. Macdonald; Revised by J. Arthur Thomson. Swan Sonnenschien & Co., Lim., London, 1892.

Medical and Surgical Report of the Children's Hospital 1869–94. Edited by T. M. **Rotch**, M.D., and **Herbert L. Barrell**, M.D. Boston, U.S.A., 1895.

Henry Morris, M.A., M.B. Lond.,—Injuries and Diseases of the Genital and Urinary Organs. Cassell & Co., Limited, London, 1895.

Robert T. Morris, A.M., M.D.,—Lectures on Appendicitis and Notes on other Subjects. G. P. Putnam's Sons, New York and London. 1895.

William Munk, F.S.A.,—The Life of Sir Henry Halford, Bart., G.C.H., M.D., F.R.S. Longmans, Green, & Co., Lond., 1895.

Richard Neale, M.D. Lond.,—The Medical Digest, or Busy Practitioner's Vade-Mecum: Appendix. Ledger, Smith, & Co., London, 1895.

F. W. **Pavy**, M.D., LL.D., F.R.S.,—The Physiology of the Carbohydrates. J. & A. Churchill, London, 1895.

Wm. M. Powell, M.D.,—Saunders' Pocket Medical Formulary. Third Edition. Henry Kimpton, London, 1895.

Reports and Papers on the Port and Riparian Sanitary Survey of England and Wales, 1893-94; with an Introduction by the Medical Officer of the Local Government Board.

James B. Russell, B.A., M.D., LL.D.,—The Evolution of the Function of Public Health Administration, as Illustrated by the Sanitary History of Glasgow in the Ninteenth Century. Wm. Hodge & Co., Glasgow, 1895.

Sydney Stephenson, M.B., F.R.C.S. Ed.,—Epidemic Ophthalmia. Young J. Pentland, Edin. and Lond., 1895.

The Johns Hopkins Hospital Reports. Vol. IV., No. 9. Report in Pathology, IV. The Johns Hopkins Press, Baltimore, 1895.

The Tallerman-Sheffield Patent Localized Hot-Air Bath. Baillière, Tindall, & Cox, Lond., 1895.

C. J. S. **Thompson**,—The Chemists Compendium for Pharmacists, Chemists, and Students. Whittaker & Co., London, 1895.

Thirty-ninth Detailed Annual Report of the Director-General of Births, Deaths, and Marriages in Scotland: Abstracts for 1893. 1895.

Transactions of the American Otological Society. Vol. VI., Part 2. New Bedford, Mass.. 1895.

Transactions of the Clinical Society of London. Vol. 28. Longmans, Green, & Co., London, 1895.

Transactions of the Dermatological Society of Great Britain and Ireland, 1894–95. Vol. I. H. K. Lewis, London, 1895.

Transactions of the Obstetrical Society of London, Vol. 37, Part 3, June and July.

Part First.

ORIGINAL COMMUNICATIONS.

I.—PUBLIC VACCINATION IN EDINBURGH.

By W. Husband, M.D., F.R.C.S.E., Instructor in Vaccination by appointment of H.M. Privy Council; Vaccinator at the Royal Dispensary; and Superintendent of the Central Vaccine Institution for Scotland.

Almost ever since the announcement of Jenner's great discovery in 1798 Edinburgh has had the benefit of public vaccination; first at the Royal Dispensary, the only one existing at that date, and subsequently at the New Town Dispensary and elsewhere. The first-named Institution began public vaccination in 1799, or the year following, by making it a department of its medical work. It was from the first proposed that the medical officers should vaccinate in turn, each holding the office for a period of three months; but it was soon found impossible to carry out this arrangement. The medical officers, as a body, could not be got to fall in with the system of rotation. But fortunately some one of their number was generally, though not always, found, who took a special interest in vaccination, and was willing to devote himself to the work, not for months, but for years at a time,—sometimes for long periods of years.

The same thing seems to have happened wherever vaccination was attempted to be carried on by voluntary effort. The vaccination department of the New Town Dispensary has had the same history, as appears from the fact that during the last half century,—I mean from 1844 to 1894,—four gentlemen, and only four—Drs Graham Weir, James Hunter, Affleck, and Cadell—have in succession held the office of vaccinator to that Institution.

These details will not, I hope, be thought irrelevant, as they serve to show how much Edinburgh is indebted to the dispensaries, and also to explain the position occupied by the vaccinators who are doing duty at present, and their relation to the dispensaries with which they are connected. As to the work done by them, and the manner in which it is done, it is for others to judge, but I have to state, speaking for Dr Cadell and Dr Buist and for myself, that we vaccinate successfully, every year, about two thousand infants belonging to a class which could not be reached in any other way than by vaccination at a public station. Two thousand constitute a large percentage, more than one-fourth, of the children born and vaccinated in Edinburgh, and it follows that we have contributed, in that proportion, to bring about the nearly complete immunity from small-pox which Edinburgh has enjoyed now for many years.

A century ago, and before the era of vaccination, small-pox was a disease of infancy and childhood, for this reason,—that almost all our children, those of their number excepted who died of other diseases, took small-pox before growing up to maturity, and one in five of those attacked died. *Now* there is hardly any small-pox among vaccinated children, and no deaths. When a case does occur it is *never* fatal. A century ago small-pox was never absent, and it caused a mortality which, one year with another, averaged fully ten per cent. of the deaths from all causes. In epidemic years—and there was an epidemic every three or four years—it not unfrequently rose to twenty per cent., or one in five of the deaths from all causes. One feels it difficult to realize these facts; but they are matters of history. Edinburgh now is so well vaccinated that small-pox is sometimes entirely absent for years together, and when an epidemic comes it is generally abortive, and the mortality from it is comparatively insignificant. That this result is largely due to the services rendered by the dispensaries admits, I think, of no dispute.

The Compulsory Vaccination Act (1863) for Scotland, as is well known, made no provision for public vaccination properly so-called, thus differing widely, or rather fundamentally, from the English Act; but, as the foregoing statement shows, Edinburgh at least had been provided with it beforehand, through the action of the dispensaries; so that, when the Act came into force on the 1st of January 1864, our vaccine stations were in full operation. Those of us who were engaged in this work at that time, and for years previously, can testify that the people never seemed to have any prejudices against vaccination, but, on the contrary, appreciated the benefit offered to them, and took full advantage of it, under the stimulus of a traditional fear of small-pox, and of a sense of duty; holding us to our self-imposed duty by the punctuality and regularity of their attendance, and this long before a Compulsory Act was even heard of. In point of fact, the Act was necessary, not to overbear opposition, but mainly to prevent neglect and procrastination. It has added largely, however, to our labours and responsibilities.

In June 1894 the dispensaries were requisitioned by the Health Committee to afford "increased facilities for re-vaccination," as well as for the vaccination of infants, and I need hardly say that the request was cordially responded to at our stations. I cannot but mention, however, that the prevalence of small-pox in April and May had caused a run upon us; so that, before the request was made, we were already busy re-vaccinating.[1] Indeed, we have always regarded re-vaccination as part of the work which we undertook to do, and persons applying for it were never refused.

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[1] I should mention here that after fulfilling our engagement for about a month our services were dispensed with thereafter, so far as the Health Committee was concerned, although we continued to vaccinate as before.

Neither the dispensaries nor the vaccinators have ever taken steps, so far as I know, to obtain recognition or remuneration; but, I confess, it has often occurred to us, and no doubt to others who have given attention to the subject, that public vaccination is not work that should be expected to be done by unpaid officials. It seems an anomaly that individuals should confer gratuitously upon the whole community the benefit of services which, from a sanitary point of view, are, to say the least, as important as any other that can be named, and which more than any other contribute to the prevention of contagious disease.

The stations conducted by Drs Cadell and Buist and by myself are, I believe, situated so far apart as not to interfere with each other's efficiency, which stations in too close proximity are sure to do. I only allude to this subject, however, without enlarging upon it; but it is well known to be a point of essential importance in the planting and recognition of vaccination stations, that they shall be sufficiently far apart.

The foregoing paper was written in the autumn of 1894, during the prevalence of small-pox in Edinburgh at that time. It had been suggested to me by Dr, now Sir Henry, Littlejohn that I should write something of the kind in connexion with the epidemic; and having in compliance with his request sent him the statement, fully concurred in by Drs Cadell and Buist, it was by him laid before the Health Committee of the Town Council. It met with no publicity, however, and led, so far as I am aware, to no result. But the subject is one of some importance, and deserves publicity. I have no doubt that ultimately, and probably ere long, public vaccination in Edinburgh and elsewhere in Scotland will be placed on a more satisfactory footing.

II.—REMARKS ON THE RESULTS OF SURGICAL MEASURES IN A SERIES OF CEREBRAL CASES.

By G. A. Gibson, M.D., D.Sc., Assistant-Physician to the Royal Infirmary.

(*Read before the Medico-Chirurgical Society of Edinburgh, 4th December* 1895.)

During the last four years many examples of organic disease of the brain have been under my care, and of these cases a certain number have presented symptoms demanding operative measures. The opportunities thus afforded me of observing the symptoms, and considering the treatment, have led me to form certain conclusions, which it is my aim to state as briefly as possible in this paper, after casting a rapid glance at the series of cases treated by surgical means.

I. CEREBRAL TUMOUR WITH JACKSONIAN SYMPTOMS.

(*Reported by Dr Gerald Fitzgerald.*)

A. A., a slater and chimney-sweep, aged 43, married, presented himself before me in the medical waiting-room, January 19, 1891, complaining of persistent headache, with loss of power in the left arm and leg.

The patient had no hereditary tendencies to disease, and seemed to have no specific taint. He had been married for many years, and was the father of thirteen children; five of them died in early childhood, but the remaining eight had always been in good health. He had been temperate in the use of alcohol, but had smoked heavily. His surroundings had been comfortable, but his work had been hard; and he had been greatly exposed to the influences of the weather.

During the last five-and-twenty years he had met with several accidents. About twenty-four years ago he fell from the third floor of a house, and alighted on a stone stair upon the crown of his head. He was unconscious for about an hour, but was able to walk home afterwards, and observed no bad effects a few days later. At different periods subsequent to the date of this fall the patient had met with other accidents, some of which involved the head, but none of them seemed to merit special attention.

Nine months before coming to the Infirmary he observed a tendency to headache. At first it was slight and transitory, making its appearance towards evening, especially if the work of the day had been more arduous than usual; the pain, however, became more severe and persistent as time went on, and just before presenting himself the headache had been constant. Soon after the onset of the headache, the patient noticed some weakness of the left arm and hand, with difficulty in using the hand for complicated movements. Weakness of the left leg began to show itself at a later period, and walking became difficult in consequence. He subsequently observed occasional twitching of the left side of the face, accompanied by some interference with his utterance, which led some of his friends, at times, to express doubts as to his sobriety.

The patient was, on examination, seen to be a strong, muscular man, 5 feet 7 inches in height, and 10 stone 6 lbs. in weight, with a normal temperature. He complained of a feeling of coldness and numbness over the left forearm and hand. His perception of ordinary, painful, and thermal sensory stimuli was everywhere acute, quick, and accurate. The headache was referred somewhat indefinitely to the vertex, and on percussing that region a vaguely-defined area of tenderness could be determined. The pupils were equal, and reacted normally. The acuity of vision was unimpaired, and the field of vision unaltered.

On examining the fundus of the eye with the ophthalmoscope, double optic neuritis was found to be present, the change being more advanced in the left eye. The patient could not hear so well with the left as with the right ear. The senses of taste and smell seemed unaffected.

Turning to the motor functions, it was found that the movements of all the muscles of the left side were much weakened. The left side of the face was deficient in expression, and the unilateral movements were distinctly diminished; he could, for example, only wink with the left eye in an imperfect manner, and his smile was mostly confined to the right side of the face. No involuntary twitching was observed at any time. The speech was somewhat indistinct. There was no deviation of the uvula or deflection of the tongue on protrusion. The muscles of the left arm, and more especially of the left forearm, were a little smaller than those of the right, and they were deficient in tone. The power of the muscles on the affected side was considerably reduced, the patient being able only with difficulty to raise the arm to the level of his head, and, tested by the dynamometer, the grasp of the left hand was only 10, as against 55 on the right side. The loss of power was most marked, therefore, in the hand and forearm. The muscles of the left thigh were very slightly smaller than those of the right; the legs were equal in size; there was no loss of tone in the lower extremity. When walking, the patient slightly dragged the left foot. The left arm and leg, on being tested by electricity, showed a slight impairment of irritability to galvanic as well as faradic stimuli. The superficial reflexes were everywhere equal on both sides of the body. A well-marked wrist-jerk could be elicited on the left side, the left knee-jerk was exaggerated, and a slight ankle clonus was found on the same side. Muscular co-ordination was unaffected, and the muscular sense unaltered. The vaso-motor and trophic functions were in no way impaired. The mental functions were in every respect good, except for a slight degree of irritability of temper, which was a new development in his disposition.

A careful examination of the head revealed a slight but distinct swelling situated 3¾ inches behind the glabella, and nearly occupying the middle line, but lying more to the right side. The diameter of this swelling was about 1½ inches. It was hard and resistant, and was evidently of a bony nature. This area was the starting-point of the pain, and here the tenderness on percussion was best marked.

In this case no difficulty could arise with regard to the diagnosis. The general symptoms—headache, interference with speech, and optic neuritis—suggested the probability of a cerebral tumour, and the focal symptoms—shown by the distinctly localized motor disturbance—clearly pointed to the presence of a mass in the middle of the right motor area, occupying the centres for the left arm, and causing pressure upward upon the centres for the left leg, as well as downward upon those for the left side of the face.

As regards the nature of the tumour, it was not so easy to arrive at a definite opinion. As is well known, if syphilis be excluded, as it was in this case, about 80 per cent. of cerebral tumours are either tubercular or sarcomatous. Not a shred of evidence in favour of any tubercular tendency being present, we were inclined to the pathological diagnosis of a sarcomatous tumour.

The patient was placed under the care of my colleague, Sir Thomas Grainger Stewart, and entered Ward 22 on the day he was seen in the out-patient department. The nature of his case was fully explained to him, and, after consulting with Prof. Annandale, the advisability of seeking relief by means of an operation was placed before him. As he would not entertain the proposal, he was treated by means of iodide of potassium and nerve sedatives.

The patient left the Ward on January 31, somewhat improved in regard to the headache, and feeling rather more power in his affected muscles. Although no longer resident in the Hospital, he attended daily as an out-patient, and was treated by means of strychnine hypodermically, with faradism to the paralyzed muscles.

The slight improvement which was manifested during the period of his stay in the Royal Infirmary was of brief duration, and the symptoms changed rapidly for the worse. The headache became so severe that sleep was greatly interfered with. The unilateral movements of the face and the movements of the forearm and hand on the affected side were completely paralyzed. The muscles of the shoulder and arm still retained some power of movement. The weakness of the lower limb had become so marked that the patient could not lift his foot clear of the ground. His memory was impaired, and his inhibitory power very markedly diminished. He was in consequence readmitted to the Ward, at that time under my care, on March 20, 1891.

The necessity of an operation was strongly urged upon the patient, and he gladly assented to the proposal. He was therefore transferred to the care of Prof. Annandale on March 24.

The following day Mr Annandale operated. The bone was removed from the region corresponding to the middle third of the motor area on the right side. Both bone and dura mater seemed quite healthy, but on cutting through the latter a soft reddish mass was exposed, which was easily separated by the finger from the surrounding brain tissue. As the mass was too large to be removed in one piece without greatly enlarging the opening in the skull, Mr Annandale divided it, and extracted it in several portions. The tumour was examined by Dr Barrett, who found it to be a glio-sarcoma.

After the operation the patient made an uninterrupted recovery, and has remained in good health ever since. He has recovered the use of almost all his muscles, he can walk a dozen miles, and has nearly equal power in both arms. With the dynamometer the grasp shows 80 with the right and 70 with the left hand. The more specialised movements, however, of the left hand have not been restored, and there is still an exaggerated jerk at the left elbow and wrist, and an increase in the left knee-jerk, along with ankle clonus; there must, therefore, be permanent degeneration of the motor tracts descending from the right side of the brain. It is a most interesting fact that Dr Argyll Robertson and Dr Mackay could trace no vestige of optic neuritis in either eye when he was seen by them in July of this year.

The great lesson which has been borne in upon me by this case, which has already been fully recorded by me,[1] is the vital importance of early operation. Had the patient yielded to our advice, and allowed us at once to give him the opportunity of surgical relief, it is very probable that he would have regained more of the power of finer adjustment in the hand of the left side.

II. Cerebral Tumour Producing Coma.

(*Reported by Dr J. G. Cattanach.*)

R. G., 50, formerly soldier, afterwards a house-painter, and latterly a park-ranger, was admitted to Ward 22 under my care on 13th April 1893, on the recommendation of Dr White. The patient had been for twenty-one years in the army and had suffered from syphilis. His second wife had borne two still-born children. Five weeks before admission his lips began to be drawn to the right side. A week later he complained of headache, at first frontal, later vertical, but towards the right side, and over the right side there was tenderness. He also began to suffer from spasms of the great toe of the left foot. He was treated with iodide of potassium, which relieved the headache, but four weeks before coming in he began to drag the left leg, which felt numb, and he could not hold objects in his left hand, but let them fall.

On examination the patient was found to be torpid, with great tendency to stupor; there was restlessness and confusion of ideas. There was some cyanosis of the lips. The tongue was furred and tremulous. The temperature was subnormal, pulse about 80, breathing 14. From the mental condition of the patient it was impossible to determine the state of the sensory functions. The pupil reflex to light was very sluggish. Intense double optic neuritis was present. Swallowing was imperfectly performed. Micturition was interfered with, retention and incontinence being occasionally noted.

On getting the patient out of bed it was seen that the left leg could not be raised at all, and an attempt, when supported, to walk, showed that the affected leg was simply dragged along. The left arm was almost quite paralyzed as well as the left side of the face. The left knee-jerk was much exaggerated, and there was left-sided ankle clonus. The patient understood what was said to him, but was scarcely able to reply, and any words employed were pronounced in a slow and slurring fashion. He was treated energetically with iodide of potassium.

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[1] *International Clinics*, vol. ii. (second series), p. 131, 1892.

During the next four days the tendency to stupor became more marked, so that by the 17th April the patient was quite comatose. The left leg and arm became absolutely powerless, but the face showed distinct twitchings on the left side.

After consultation with Mr Alexis Thomson it was decided that an operation was not only justifiable but necessary, and the patient was transferred to Ward 7 on the 18th April. As the symptoms pointed to an implication of the entire motor area on the right side of the brain, the site selected for operation was the middle zone of the Rolandic region. On removing the bone the dura mater was seen to bulge very markedly, and on reflecting the membrane the exposed brain swelled out and showed no pulsation. The surface of the brain seemed normal in colour and consistence. On incising the brain substance and introducing the finger nothing abnormal could be felt. The lower zone of the Rolandic area was then exposed, also with negative results.

On the following day the patient was somewhat improved. He expressed himself freely and sensibly in answer to questions, and said he felt much better. He put out his tongue readily, and took food with relish. He had, however, no return of power in the muscles of the left side. Two days later he became delirious, and muttered quietly. He had some ptosis of the left eye, and internal squint of the right. Involuntary micturition was present. On the 22nd April he again became sensible, recognised and conversed with his wife, but in the afternoon he collapsed suddenly, lay for a time in a state of coma, with the eyes turned to the right, and died quietly.

The post-mortem examination, performed by Dr Leith, showed that there was no sepsis, and that the wound had almost entirely healed. No meningitis was present. On slicing the brain, a tumour, of a greyish-red colour, was found in the right hemisphere. It was about 1 inch in transverse and ¾ inch in antero-posterior measurement, and occupied the corpus striatum. The mass was outside of the caudate nucleus, and occupied the knee and the anterior portion of the posterior limb of the internal capsule, encroaching on the lenticular nucleus, and pressing upon the corpus callosum. In the posterior part of the brain there was some encephalitis. The microscopic investigation of the tumour showed it to be gliomatous in structure.

From this case, which had, unknown to me, been seen previously by Dr Bramwell, and to which he referred in a recent communication,[1] some useful deductions can be drawn. In the first place it is evident that even Jacksonian spasms may have little localising value. Judging by the symptoms, a lesion might reasonably have been expected in the cortex, beginning in the centre for the lower limb and invading the centres for the arm and face. The case further shows that on the removal of the increased intracranial pressure consciousness was for a time restored.

It may be asked whether, in a case like this, if the diagnosis had been correctly made of a tumour in the region of the great basal ganglia, operation would have been justifiable. To my mind it would be not only justifiable, but even necessary. Sir Thomas Watson in his classical lectures recommends, in the case of patients dying of cholera, the transfusion of warm water into the veins with the object of allowing the opportunity of making a will.[2] How much more urgently is surgical interference demanded in such a case as this, with the possibility of finding a lesion, supposed to be inaccessible, situated in such a position as to allow of its removal!

III. Cerebellar Tumour.

(*Reported by Dr Purves Stewart.*)

I. K., a married woman, æt. 25, was admitted on 8th April 1895 to Ward 25 of the Royal Infirmary, then under my charge, on the recommendation of Dr Laing of Dundee. She complained of headache, giddiness, and difficulty in walking. These symptoms had commenced ten months before admission, and had steadily grown worse in spite of treatment.

Her family history was satisfactory, there being no evidence either of tubercular or of inherited specific disease. She had been married for three and a half years, and had borne one child, who died from convulsions at the age of eight months, four weeks before patient's admission to Hospital. When three months old the child had on its face and body a rash, the exact nature of which the mother could not describe. The patient never had any miscarriages. There was no history of syphilis, either primary or secondary. The health of her husband, who is a sailor, could not be ascertained.

The patient was examined on the day after admission, and the following conditions were found in the nervous system:—As regards the sensory functions, there were no subjective sensations of any sort, with the exception of a deep-seated headache, which patient described as feeling "like a sharp dagger," strictly localised to the frontal region, exactly over the left eye. This pain was not increased by firm pressure, nor by tapping over the painful area. There was no cutaneous anæsthesia anywhere, and the muscular sense was normal. On examination of the eyes there was found constant marked nystagmus, both in the horizontal and in the vertical meridians. The left pupil was larger than the right; both pupils reacted to light and to accommodation. On ophthalmoscopic examination distinct optic neuritis was found in both eyes. Although the external and middle ears were normal, yet patient was completely deaf in the right ear, both to external sounds, such as the ticking of a watch, and to a tuning-fork placed on the vertex. Taste and smell were normal.

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[1] *Transactions of the Medico-Chirurgical Society of Edinburgh*, vol. xiii., new series, p. 132, 1894.

[2] *Lectures on the Principles and Practice of Physic*, fourth edition, vol. ii., p. 528, 1857.

As regards the motor functions, there was no motor paralysis or paresis, with the exception of the soft palate, the functions of which seemed to be slightly impaired, as evidenced by the regurgitation of fluids through the nose during swallowing. Her voice was somewhat "bleating" in character, and she herself noticed that it had altered from its normal state. The larynx was not examined. The organic reflexes were normal, with the exception of deglutition, which was occasionally a little difficult, especially on attempting to drink large draughts of fluid. The skin reflexes were normal. Both knee-jerks were equally exaggerated, and occasional ankle clonus could be elicited on both sides. The patient's gait was very pitching and staggering in character, she reeled along, walking on a broad base, planting her feet widely apart, but neither stamping her heels nor scraping her toes. She complained of distressing vertigo, but only when she moved in bed, or tried to sit up or walk. So long as she lay still there was no feeling of giddiness. Her gait was so unsteady that she inclined to fall unless supported, and there seemed to be a tendency to fall on the right side. On making patient stand, with her eyes shut and feet together, the swaying was very marked, and here also she tended to fall to the right side.

There were no vaso-motor or trophic changes. The patient's intelligence, attention, and memory were excellent. She slept badly, owing to the persistent headache, which was always worst at night. There was no abnormality to be discovered on examination of the cranium and spine. As regards the other systems, the alimentary system was normal, save for a slight tendency to constipation; the lungs and heart were quite sound. As to the integumentary system, there was a small patch of ichthyosis over each ligamentum patellæ. With respect to the reproductive system, patient had amenorrhœa of four months' standing. The urine contained no abnormal constituents. Prior to admission, the patient had not suffered from vomiting, but this symptom supervened a few days after she came into Hospital. This vomiting recurred at intervals, at first of several days, but later more frequently, and it was quite unassociated with the ingestion of food.

Such being the clinical facts, the question of diagnosis next arose. The presence of headache, vomiting, and double optic neuritis indicated some intra-cranial lesion. The absence of distinct motor paralysis, either of limbs, trunk, or face, combined with the presence of a staggering gait and distressing vertigo, pointed clearly to the cerebellum as the seat of the lesion.

On attempting to attain to a more definite localisation, there were several points to guide us. The tendency to fall towards the right side is usually regarded as significant of right-sided cerebellar lesions, and had some weight in considering the case. The right-sided labyrinthine deafness showed that there was some lesion of the auditory path on that side. According to Meynert, after leaving the nucleus the auditory tract passes through the cerebellum, and whether this be allowed or not, there can be no doubt that the right-sided deafness points to the probability of pressure upon some part of the auditory path or its nucleus. It seemed clear that the affection was right-sided, and on account of the trouble connected with deglutition as well as with hearing it seemed probable that it was situated at a low level.

But in addition to these facts there was another point which was of much interest. It is one which has not, so far as is known to me, been previously described as of diagnostic import, and although we cannot as yet assign any definite position to it, it appears to me to have the promise of the highest value. Dr Purves Stewart, resident physician at the time, called my attention to the persistent headache in the left frontal region, and suggested that it might be produced by irritation of the fronto-cerebellar fibres crossing from the left frontal region to the superior cerebellar peduncle. It affords me much pleasure to have this opportunity of stating that, in my opinion, he has added a valuable symptom to the diagnostic means at our disposal in studying cerebellar disease. Whether it may ultimately prove of as much use as we hope cannot at present be foreseen, but some corroborative facts have already been brought under my notice which induce me to cherish the expectation that this new symptom is one holding out the promise of real utility.

From a consideration of these facts, the diagnosis was made that there was a tumour in the lower part of the right lateral lobe of the cerebellum. Whether the tumour was of the nature of a gumma, a tubercular mass, or a new formation, could not be determined. With the view of eliminating as far as possible the chance of the lesion being a syphilitic one, the patient was at once placed under treatment, by gradually increasing doses of iodide of potassium, until on 20th April she was taking 60 grs. three times a day. In addition to these massive doses of iodide, inunction with blue ointment was applied every day to two parts of the head,—over the right half of the cerebellum, and over the seat of pain in the frontal region. This treatment was continued until 30th April. So far from improving, the patient grew worse; all her symptoms became more aggravated, and more especially the vomiting became more frequent. On 30th April, therefore, after consultation with Professor Annandale, she was transferred to his Ward, with a view to surgical interference. After her admission the vomiting increased still more in frequency, and the patient was evidently going from bad to worse.

On 3rd May Professor Annandale cut down over the right lobe of the cerebellum, trephined the skull, and discovered a tumour about half an inch below the surface. The tumour was about the size of a pigeon's egg, and lay low down in the lateral lobe of the cerebellum, rather closer to the foramen magnum than to the outer wall of the skull. On opening into the mass, about a drachm of clear serous fluid escaped and was lost. Within the cyst was found a solid tumour, apparently encapsulated. This was completely removed piecemeal, and subsequent microscopic investigation showed it to be of the nature of a fibro-sarcoma.

The progress of the case after the operation was eminently satisfactory. When the patient recovered from the chloroform anæsthesia the frontal headache had entirely disappeared, and has never returned again. The sickness also entirely ceased, the nystagmus became much slower and less marked. Instead of being constant, as it was before the operation, it occurred only when the patient fixed her eyes on some object not directly in front of her. When the globes of the eyes were in a position of rest—that is, looking straight forward—there was almost no nystagmus. The feeling of giddiness on changing her position also entirely disappeared. Her swallowing became quite perfect, even with fluids. Her gait much improved. The optic neuritis almost disappeared.

Since leaving the Royal Infirmary the progress of the case has been most satisfactory, as may be seen from the letter now subjoined:—

"9 Tay Square, Dundee, Nov. 18, 1895.

"MY DEAR DR GIBSON,—I have just received your kind note about Mrs K. I delivered her of a healthy girl about three weeks ago, after a perfectly easy and normal labour. She made an excellent recovery, and is now very well. Had it not been for this she would have been across to report herself, and no doubt she will do so when she can. She walks quite well now, speaks as she used to, and has no headache or giddiness. There is still a little nystagmus, and over the site of the operation a painless fluctuating swelling still remains. In all respects it has been a most satisfactory result.—With kind regards, believe me, very sincerely yours,

"JAMES H. W. LAING."

But little commentary is necessary on this case, the full details of which have been placed on record by Dr Purves Stewart,[1] but it now seems to me quite clear that it would have been better for the patient if we had operated earlier, as we might then have got rid even of the slight nystagmus still present.

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[1] *Edinburgh Hospital Reports*, vol. iii. p. 447, 1895.

IV. Infantile Hemiplegia.

(*Reported by Dr A. M. Easterbrook.*)

W. M., schoolboy, aged 13, was brought on several occasions to see me in the waiting-room, complaining of paralysis of the left side of the body, especially of the left leg, and fits. The patient's father is alive, but subject to bronchitis; his mother enjoys good health. There seems to be, however, a bad history of parturition on the part of the mother. The patient had four brothers, all dead; two only survived a few hours after birth, and one about a day and a half after birth; the remaining brother died of consumption. The patient says one cousin has paralysis of the right side, but he thinks it was the result of an accident. The patient says he has a pleasant and comfortable home, and that the locality, as far as he knows, is healthy; the drains seemed to be out of order, however, when he was attacked by diphtheria. He has not had the usual child's complaints (as measles, scarlatina, whooping-cough); he has had bronchitis several times. About two years ago he was in a private hospital with diphtheria for seven weeks; he does not seem to have suffered from post-diphtheritic paralysis, nor was his left-sided paresis aggravated by the diphtheria; he has had no other serious illness except the present condition. The patient says he has had the paralysis ever since birth, and he says his mother ascribes his condition to an injury he received at birth on the right side of the head; the labour was evidently a difficult one, and forceps were used. His mother told him that the doctor used to come and manipulate his head for some days after the birth, and expressed hopes that the child would recover from the injury, but the whole of the left side of the patient's body has ever since birth been paretic and weaker than the right side, and has had a tendency to be ill-developed; he has evidently had talipes equinus of his left foot since his childhood, as he says he always walked as he does now. He has been treated for his condition, but has not made any marked improvement, although he says that now he has more power in and can use his left arm better than before. With regard to the fits, he states that he commenced to have them about twelve months ago, and at first he used to have two, three, and four in a week, but of late (for the last month or two) they have diminished in frequency, he only having now about one a week. He says he can usually tell when he is going to have a fit, although he cannot describe any very definite aura immediately preceding the fits, but he usually has a headache for about a day before, and sometimes feels sick for some hours before a fit; and when actually going into the fit he says he usually becomes giddy, and everything seems to whirl round about him. He says he does not always lose consciousness during a fit, but often does so.

On admission the patient was seen to be fairly well nourished, but the left side of body was not so well developed as right. The patient's left upper extremity seems to be slightly less developed than the right, and there seems to be some degree of permanent contracture of the left biceps, causing the left elbow to assume the flexed position. The left lower extremity seems slightly less developed than the right, and there is marked talipes equinus of the left foot, and also some degree of inversion of the left foot. The patient looks anæmic, and his head is inclined to droop forwards on the chest. He has rather prominent eyeballs, and at times a somewhat vacant stare. His face generally is somewhat expressionless; his temperament seems to be rather of a nervous character, and he has not a very intelligent expression. When spoken to, however, he seems to have a fairly good memory and intelligence, but is apt at times to be slightly dazed and vacant. This is not, however, by any means a marked feature. His muscles, generally speaking, seem to be subject to small jerky, spasmodic movements, which seem to be involuntary. There are no marked fibrillary twitchings. The patient is subject to pain in the head, especially on the right side and in the frontal region. When it is present, he says it is a dull aching pain, and that it makes him feel dizzy and unable to do anything, and he has to go to bed whenever it comes on; the patient says he always has this headache before and more severely after a fit. His headache, however, is sometimes present without a fit necessarily occurring. He also experiences sometimes a stiffness and pain round the neck, especially at the back of the neck,—it prevents him from moving his neck freely. The patient also sometimes experiences sensation of pins and needles down the whole left side of body, especially in the left foot, not much in the left arm. The sensation of pins and needles is present sometimes apart from fits. He also says that his whole left side feels asleep when he is going into a fit, and for an hour or so after he has come out of a fit. He also experiences tingling sometimes in the left upper and lower extremities. No history of lancinating or girdle pains, with the exception, perhaps, of that occasional stiffness he experiences in the neck. The tactile sensibility seems to be unimpaired; he can always tell you where you are touching him when his eyes are closed. Perhaps at times he is rather slow in localising the spot, but on the whole his sensation of touch is fairly normal. Sensibility to heat and pain are all unimpaired. After examining him for some time he has made mistakes with regard to heat sensation on his left leg, but he is nearly always right in distinguishing between hot and cold test-tubes. The muscular sense seems to be unimpaired. He can balance himself quite well with his eyes shut, but has some difficulty in so doing, even with his eyes open, when he puts both feet closely together, due to talipes, perhaps. The special senses are unimpaired. The organic reflexes are normal, except that the breathing tends to be jerky sometimes, and he says he is breathless when coming out of a fit; also the heart's action is irregular. The superficial reflexes are little affected. Ankle clonus is markedly present on the left side; it can occasionally be produced on the right side. The knee-jerk is distinctly more marked on the left side; and knee clonus can also be produced on the left side by repeated tapping over the quadriceps extensor tendon. The wrist-jerk is well marked on the left side; not so on the right side. The patient's voluntary motor power is somewhat impaired on the left side. This is most marked in comparing the two upper extremities, the left arm being distinctly weaker than the right arm. No special groups of muscles seem to be involved. The power of co-ordination is not very great in either upper or lower extremities, but better on the right side than on the left. He cannot describe a circle well with either foot, but a better attempt is made with the right foot. He cannot walk along a straight line very well; this is perhaps due to a certain extent to his deformity on the left side,—talipes equinus. He can pick up objects well enough, but is apt to be slow in his movements. On being asked to touch various parts of his body with his eyes shut, he goes wider of the mark with his left hand than with his right. As a rule, he puts his finger within two or three inches of the spot he is asked to touch. The skin is dry and fairly well nourished on both sides. The soft tissues of the left extremities are somewhat wasted,—*i.e.*, not so well developed as on the right side. The left lower and upper extremities tend to be colder than those on right side. There does not seem to be any tendency to glossiness of the skin on the left side or elsewhere. There are no eruptions except a papule on the nose, and the mark of a dog-bite on the back of the right popliteal space. The intelligence is fairly good. He is apt to be distracted and dazed at times (especially after much examination). His memory is not particularly good. His speech seems to be normal, but patient cannot read or write well—only very simple words, as dog and cat. He can only write simple words and his own name, and only in badly-formed capitals (probably due to neglect of education). The patient sleeps well, as a rule, except when his headaches come on, and these then prevent him from sleeping. He does not seem to be troubled with dreams. There is a general fulness to be made out over the right temporo-parietal region. No special prominence or thickening of bone is to be made out at any one point. No scar is observed on head. There is no specially painful spot to be made out by percussing all over the head. On inspection, a slight left lateral curve is seen to be present in the dorsal region. The first three lumbar spines are perhaps unduly prominent. Percussion down spine and hot sponge test elicit nothing of importance. The result of careful measurement of the bones and muscles shows no striking differences between the two sides.

The patient was brought to see me at the waiting-room on several occasions, and was treated by means of tonic remedies along with the bromides. As he made no progress in any way he was taken into Ward 22, then under my care, on 18th April 1894. It seemed to me that there were two possibilities,—he might be afflicted with hemiplegia dependent on porencephaly, or caused by some localised lesion on or near the motor area. On consultation with Mr Alexis Thomson, we agreed that in view of the cranial accident at birth there was at least a possibility of the latter alternative, and resolved to operate, a course that was eagerly sanctioned by the parents. The patient was therefore transferred to the surgical side.

Mr Thomson removed a large piece of the skull in the situation of the right motor area, but failed to see any alteration in the membranes or cortex. He therefore sewed the membranes, replaced the bone, and closed the wound. The boy made a perfect recovery from the operation, but except for some increase of intelligence has not in any way improved. We were not, in this instance, sanguine as to the possibilities open to us; but after reviewing all the facts and circumstances presented by the case, it seems to me that we should with similar conditions follow the same course as on this occasion.

V. General Paralysis with Epileptiform Attacks.

(*Reported by Dr J. G. Cattanach.*)

J. R., aged 47, domestic servant, was admitted to Ward 6 on 4th December 1894, on the recommendation of Dr Crawford Dunlop.

About twelve years before admission she was struck on the head by a burglar. She was for some time unconscious, and was never able to give any clear account of the assault. Four years before admission she began to take fits, and had since then suffered from convulsive attacks at irregular intervals. These were said to have commenced invariably by spasms of the right arm, spreading over the entire body. Latterly after the attacks she was in a more lethargic condition than used to be the case. In September the patient was placed in the Elgin Asylum on account of her mental condition. While there she had two convulsive attacks, and more than one maniacal outbreak. The convulsions were said to have begun in the right arm, and to have been almost confined to that limb.

On examination the patient presented no change in sensibility, common or special. There was no optic neuritis. The organic and superficial reflexes were unaltered, and there was no change in the myotatic irritability. The intelligence was weak. Questions received irrelevant replies, and the patient was moved to tears and laughter by slight causes. No convulsive attack took place while the patient was under my care, although she was watched day and night. The relatives of the patient were very anxious that some attempt should be made to ascertain the cause of the convulsive attacks, and to remove it if possible. Mr Cotterill accordingly saw her, along with Dr Dunlop and myself. It seemed to us that the patient suffered from dementia, and that it was possible there might be some focus of irritation on the right side of the cortex. It was therefore determined to have recourse to operation.

On 20th December Mr Cotterill, with the wheel-saw, turned back a flap of bone about the size of the palm of the hand and exposed the motor area on the left side. There was no thickening of the bone or dura mater, and on reflecting the latter no increase of fluid could be seen. The surface of the brain, however, was somewhat flattened, and showed an opalescence rather suggestive of some old-standing hyperæmia. On stimulating the motor area with a weak faradic current there was a sluggish reaction of the leg and arm, but the side of the face was thrown into typical epileptiform spasms. By means of a fine trocar and cannula a small quantity of fluid was drawn from the lateral ventricle, the dura mater was stitched, the bone replaced, and the scalp sutured.

The patient spent a very restless, noisy night. The temperature rose to 100° and the pulse to 120, but the respirations remained normal, about 17 or 18. On the following day she was still very restless; the pulse, temperature, and respiration rose. During the next two days the symptoms became more serious, and early in the morning of the 24th December, after the temperature had risen to 102°·6, the pulse to 162, and the breathing to 52, she passed quietly away.

The brain was forwarded to Dr W. F. Robertson, pathologist to the Royal Asylum, who kindly furnished me with the following report:—

"Royal Asylum, Morningside, 25th December 1894.

"DEAR DR GIBSON,—Many thanks for the interesting brain you sent me yesterday. I have cut and examined sections, and now send you one. Histologically the case is one of general paralysis of the insane, and I have little hesitation in saying that the case was really one of that kind. Dr Cattanach has sent me a note of the history, which is quite consistent with this view, though somewhat exceptional. You will notice marked spindle-cell hypertrophy, not only in the first layer, but in the depth of the cortex and in the white matter; thickening of the capillaries, aggregation of round cells upon the larger vessels, and advanced degeneration of the nerve cells. The last is chiefly pigmentary, but there is also a marked degree of nuclear vacuolation. This, as you no doubt remember, Dr Bevan Lewis specially associates with epilepsy—an observation which we have not been able to corroborate at Morningside. I had quite recently a case of general paralysis which showed as marked nuclear vacuolation as is seen in this case.—Yours very sincerely, "W. F. ROBERTSON."

Now, in this case there was an error in diagnosis; the case seemed to me to be one of dementia. If it had been regarded by me as one of general paralysis, looking to the published results of operative measures in that disease, it would have seemed to me undesirable to have adopted any surgical procedure. But, considering the condition as one of dementia, and with the history of Jacksonian spasms, there seemed to be a very clear duty in the case. Dr Clouston, in a private communication, informs me that alienists make about two per cent. of errors in the diagnosis of general paralysis, and he is kind enough to indicate that he would allow the ordinary physician a wider margin.

VI. Old Fracture of Vertex of Skull with Severe Pain.

(*Reported by Dr Purves Stewart.*)

C. M., 55, rivetter, presented himself before me as an out-patient, and was admitted on 16th April 1895 to Ward 22 under my care. Thirty-three months before, he had been injured by a plank which fell 30 feet, and struck him on the head, fracturing at the same time his left clavicle and left radius. For two days he was unconscious, and was under treatment in Sunderland Infirmary for two months. During the interval which had elapsed since then he had for the most part been in bed suffering from occipital headache, giddiness, inability to walk, and deafness of the left ear, attended by blowing noises. He had never been subject to any spasmodic symptoms throughout. The patient was well nourished; his expression was vacant, his apprehension dull, and his speech sluggish. On the left side of the scalp there was a curved scar $2\frac{3}{4}$ in. long near sagittal suture, with convexity towards it; the posterior end of the scar was $6\frac{3}{4}$ in. from the glabella, and $1\frac{1}{4}$ in. from the middle line, and its direction was towards the temple. The bone beneath showed a depression. There was no tenderness; none of the muscles were in a state of paresis; the patient could not turn quickly or walk long; the left knee-jerk was about normal, the right diminished; there was no clonus; both eyes had slight hyperæmia of nasal part of the disc.

On consultation with Mr Alexis Thomson it was resolved that, as the symptoms were undoubtedly due to the injury, exploration of the site of the lesion would probably afford relief, although it might fail to disclose anything more than thickened bone, and the patient was therefore transferred to Ward 7, under Mr Thomson's care, on 22nd April.

On the 23rd April Mr Thomson reflected a large scalp flap, and with the wheel-saw removed an elongated segment of bone, including the area of depression. The inner table appeared smooth; there was considerable bleeding from the diploë, the dura mater was much thickened, and on opening it more than the usual amount of cerebro-spinal fluid escaped. The brain surface appeared healthy. After stitching the dura mater, the bone was replaced and the flap sutured.

The patient recovered rapidly from the effects of the operation, and left the Infirmary quite free of pain,—showing, however, to the time of his departure the slight change in the optic discs. Commentary on this case is needless.

VII. Fracture of Skull, with Compression of Brain from Hæmorrhage.

(*Reported by Dr J. G. Cattanach.*)

J. R., 50, labourer, was admitted to Ward 6, under my care, 6th January 1895. For some weeks he had been drinking heavily. On the morning of the 5th January he had a fit in his lodging, and afterwards went out. He was picked up in an unconscious state in the street by the police, and detained overnight as being drunk and incapable; but as he was still unconscious on the following morning, he was brought to the Infirmary.

He was, when examined on 7th January, found in a comatose condition, with a temperature of 103°, a pulse of 136, and breathing of 42. The breathing was stertorous, the pupils unequal, the right being contracted, the left dilated. There was a cut over the left parietal eminence. Twitchings were seen on the right side of the face.

On the 8th January the patient had a localised convulsion, commencing with a spasm of the muscles of the right side of the face, and spreading to the arm and leg of the same side. This hemispasm was repeated about every ten minutes. In the intervals between the attacks the muscles of the affected side were limp and flaccid.

On consultation with Mr Alexis Thomson, it was resolved that, as the patient was apparently dying from compression primarily of the left cerebral cortex in the motor area, it was a duty to give him the possibility of operative relief, and he was accordingly transferred to his care.

Mr Thomson raised a flap over the left arm and leg areas, and with a wheel-saw removed a piece of bone. The dura mater was yellowish in patches, bulged considerably, and did not pulsate; when incised an extensive thick blood-clot was found. This was as far as possible washed away, the dura mater was sewn, the bone was not replaced, and the flap was sutured.

The patient was decidedly more sensitive to stimuli after the operation, and remained free of spasms for about two hours, but after that interval he began to have twitchings of the right side of the face, which recurred about three times an hour, but finally ceased nine hours after the operation. He had involuntary micturition, but looked about him. At 10 o'clock on the morning of 9th January he died quietly.

At the post-mortem examination by Dr Muir, on 10th January, a fissured fracture was found, extending from the left parietal eminence to the middle fossa of the base. A considerable amount of blood had escaped, and there was laceration of the right temporal lobe of the brain by *contre-coup.* All the arteries were atheromatous, but it was impossible to detect the source of the hæmorrhage. Any remarks upon this case would be superfluous.

The principal conclusions to which the consideration of these cases has led me have been stated in connexion with the narration of each. It only remains to sum them up—an easy task, as they are almost entirely comprised in the advice to operate early, which can only be rendered possible by the loyal co-operation of the physician and the surgeon. We sometimes hear the statement that the diagnosis of such cases belongs solely to the physician, and that when he has made up his mind he has simply to issue instructions to the surgeon. In fact, we are often told that the surgeon is simply the hand, the physician the head. This, however, is a point of view that should be warmly repudiated. Not only does it throw discredit upon a great branch of our profession, but it also renders the mutual helpfulness of medicine and surgery impracticable, and prevents the full benefits which accrue from the harmonious co-operation of real fellow-workers.

III.—A RARE FORM OF ABORTION—EXPULSION OF THE AMNIOTIC SAC ALONE.

By F. W. N. Haultain, M.D., F.R.C.P.E., Lecturer on Midwifery, Edinburgh School of Medicine,

(*Read before the Obstetrical Society of Edinburgh*, 11*th December* 1895.)

In January 1891 I showed to this Society an abortion sac which had been expelled from a patient who believed herself to be about three months pregnant.

The sac was the size of a large orange, and was formed simply by the amnion; it was distended by liq. amnii, in which was a large quantity of detritus, but no trace of an embryo. I also showed the decidua, which was thick, and completely lined by the adherent chorion. Unfortunately, through the burning of my museum, I am unable to again show this specimen.

Since that time, however, two more examples of simple expulsion of the unruptured amniotic sac have come under my notice, both of which I am able to show. In these it will be noted the embryos are well formed, appearing to correspond to a period of development of about eight weeks. In one of them it will further be noted that the amount of liquor amnii is far in excess of what is generally present with embryos of that age. In this case the clinical history is sufficiently interesting and instructive to merit detailed description.

The patient, aged 37, iii. para, believing herself to be about three

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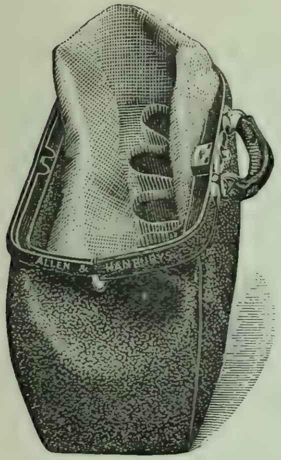

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Edinburgh: Oliver and Boyd.
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and a half months pregnant—calculating from her last menstrual period—expelled per vaginam, after a few hours of abdominal pain and slight hæmorrhage, a large cyst about the size of a goose egg.

As she lived several miles from her medical attendant, Dr Stirling of Perth, it was some hours after its expulsion before he could attend. On arrival he found, as is usual, that all clots, etc., had been scrupulously removed, and the cyst alone remained to explain the nature of the case.

There being now but trifling hæmorrhage, and an entire cessation of uterine contractions, he naturally inferred that expulsion of the ovum had been complete, an inference that was strongly corroborated by the os uteri being but slightly dilated.

The progress of the case was for the first two weeks eminently satisfactory; all hæmorrhage ceased within twenty-four hours, and the only symptom which otherwise marred a complete recovery was an excessive watery vaginal discharge. This continued steadily to flow in spite of treatment by means of hot vaginal syringing and douching, and after the third week was from time to time associated with considerable blood loss.

The patient from this cause gradually became so enfeebled that I was asked by Dr Stirling to see her, six weeks after the abortion had occurred. On examination, I found the uterus considerably enlarged, and the os uteri slightly dilated, but insufficiently to admit the introduction of a finger.

After dilating with Hegar's dilators, I felt the uterine cavity to be lined with a rough irregular mass, which I recognised as the decidua. This I had considerable difficulty in removing, as from its intimate connexion with the uterine wall it had to be torn off piecemeal. The operation was attended by free, almost alarming hæmorrhage.

On examination of the pieces of tissue removed, many portions of chorionic membrane could be seen adherent to the decidual tissue, while by the microscope vascularized chorionic villi were seen in great abundance.

Unfortunately, the clinical history of the second specimen shown cannot be got.

The pathological, clinical, and even physiological considerations of the specimens cited and quoted are of considerable interest, and I trust have warranted me in bringing them under your notice. From their pathological aspect the preparations are interesting from their rarity, or, perhaps, I should rather say from the want of description of similar specimens in the many popular midwifery text-books. That they are rare is probable, but it is a strange coincidence that since my attention has been directed to this condition, I have in a comparatively short space of time met with three well-marked examples. Yet, after an exhaustive search through the eminent works of Lusk, Playfair, and Parvin, I have been unable to find a single reference to the occurrence of this form of abortion. That this is due to their want of importance can be no plea for the omission, as I shall endeavour to show, when considering their pathological and physiological bearings.

In the *American System of Gynæcology and Obstetrics* mention is made of the existence of this form of abortion, and a woodcut of the condition is represented, while a fuller description, illustrated by two drawings, is met with in Winckel's *Text-book of Midwifery* (p. 297).

What the exact cause of this form of abortion is, must, from the scant material at disposal, be more or less speculative as to whether it be the result of a simple accident, or occasioned by pre-existing ovular disease.

To the former Winckel seems to lean, attributing it to a simple tearing of the amnion from the chorion during expulsion. He at the same time depicts two examples at the fourth and fifth month respectively, and avers that the cord had been torn at its placental insertion.

That rupture of a healthy cord at this situation without laceration of the amnion can occur so late in pregnancy as the result of simple uterine contraction is difficult to imagine, if one tests the strength of normal cords at this period of development.

More probable is it, that pre-existing disease and death of the embryo has been present, rendering its attachment to the uterus less secure. This supposition is strongly supported by the specimens which have come under my notice. In the first, this is undoubted, there being no trace of embryo present; while in the second, it will be seen that there is, firstly, an excess of liquor amnii, in which is present a large quantity of débris; and, secondly, an extremely feeble cord for the size of the embryo, while its placental end is represented by a thickened, smooth nodule, no trace of tearing being present. In specimen 3 the embryo lies free in the amniotic sac unattached to the amnion. This may, however, be due to subsequent tearing of the cord, but careful examination fails to reveal any portion of cord either attached to the amnion or embryo.

The total absorption of the embryo in Case I., and the large quantity of detritus in the sac of specimen 2, naturally point to the death of the embryo some considerable period before expulsion of the sac occurred, while the large excess of liquor amnii in both cases suggests its continued secretion after the embryo had ceased to live, a condition which has already been stated to be possible by other writers. It may, however, be argued that early hydramnion has been the cause of death of the embryo,—a contention it is absolutely impossible satisfactorily to refute from the evidence of the two cases.

In this relation the physiological bearings of the preparations in regard to the origin of the liquor amnii must be evident. To go deeply into this intricate and much disputed question is naturally quite outside the scope of this paper, but one cannot help noting that the maternal origin is strongly supported, firstly, by the excess of liquor amnii when compared with the development of the embryos, which give every evidence of having died a considerable time before expulsion; and, secondly, from the extremely interesting history of Case II., in which the profuse watery discharge formed such a prominent symptom, the discharge being derived from the thick vascular decidua. From what has been shown it may be inferred that the pathology of the condition, so far as can be elicited from the specimens before us, goes to show that there has been primary death of the embryo, which has given rise to uterine irritation and contraction, resulting in the expulsion of the amniotic sac through tearing of the chorion, which has been retained through its intimate attachment, by means of its villi, to the still adherent vascular decidua.

This mechanism of expulsion being necessarily associated with the least possible interference with the attachment of the decidua to the uterine wall, must lead to the formation of the so-called cavernous mole by allowing of continued growth of the still adherent decidua, and throws light upon the absence of the fœtus, which is so commonly met with in these specimens, and which is usually assigned to its complete absorption.

Clinically this form of miscarriage is instructive, as showing how abortion may occur with a minimum of hæmorrhage and decidual detachment, and allow, therefore, of combined decidual vitality for a prolonged period, which will not from its presence stimulate uterine contraction, and thus court expulsion. At the same time, the record of watery vaginal discharge as evidenced in Case II., may, though rare, be the means of assisting diagnosis under similar conditions. Indeed, from the many interesting aspects presented, I trust I have been justified in bringing the subject shortly before you, and thus putting on record the cases of this somewhat unusual form of abortion.

IV.—MITTELSCHMERZ.

By J. Halliday Croom, M.D., F.R.C.P. Ed., F.R.S.E., Physician to the Royal Maternity Hospital; Physician to, and Clinical Lecturer on Diseases of Women, Royal Infirmary; Lecturer on Midwifery and Diseases of Women, School of Medicine, Edinburgh.

(*Read before the Obstetrical Society of Edinburgh*, 11*th December* 1895.)

I do not propose to enter into a general discussion of dysmenorrhœa. The object of the present communication is to discuss a form of dysmenorrhœa, by courtesy so called, which occurs, not at the period when the external manifestation of menstruation takes place, but at mid-term,—a condition to which the Germans have given an appropriate name, "Mittelschmerz," and which the French have, less felicitously, called "Dysménorrhée intermenstruelle." Whatever name may be applied to it—and certainly intermenstrual dysmenorrhœa is not suitable—the condition is a well-marked one, wherein an attack of dysmenorrhœa proper is simulated, without, necessarily, any external hæmorrhage. It does not at all resemble the pre-menstrual pain, or the continued pain associated with inflamed or diseased ovaries, but it is a condition which occurs definitely each month, at a definite period, and for a definite number of days.

So far as I am aware, the condition was first of all described by Sir William Priestly many years ago, and it has been also discussed by Fasbender and Sorel.

I will now recount the more important points of a case occurring in my own experience, which may be taken as fairly typical. It was that of a young girl of 18 years of age, whom I first saw at Prof. Simpson's private clinique somewhere about the year 1873. She complained of acute pain, sometimes in one side and sometimes in the other, occurring with the utmost regularity, fourteen or fifteen days after her menstruation. This had been the case ever since she was 14, and she did not begin to menstruate until she was 16. There was no abnormality, so far as I could discover, in the ovaries, tubes, or uterus. I saw her more or less regularly for thirteen or fourteen years after she first came under my observation.

During all that time she menstruated with regularity, and her intermenstrual sufferings continued. During the years I knew her she occupied various situations in the capacity of a housemaid. She menstruated regularly and without pain, but every month she was obliged, in order to avoid her intermenstrual suffering, to use morphia rather freely. She ultimately married and went to the Colonies, and I know nothing of her subsequent history. Her pain began after a very severe attack of scarlet fever when she was about 14 years old.

The second striking case that has come under my personal observation was that of a woman who was sent to my ward for profuse hæmorrhage, associated with marked dysmenorrhœa, in addition to a definite and severe pain occurring between the menstrual periods, about the fifteenth day. The pain was severe and localised to the left side, and accompanied occasionally, though not always, by a slight discharge, sometimes of blood, and sometimes of clear fluid. On examination she was found to have a uterus enlarged to 3½ inches, and containing a submucous fibroid on the right side.

After continued treatment, including curetting, she was sent home, but returned in a few months with the symptoms all considerably aggravated. It was resolved, therefore, with a view to checking the hæmorrhage, which had become so profuse as to prevent the patient continuing her duties, to remove her appendages. This was done; the right ovary was somewhat cystic and the tube thickened; on the left side the ovary was normal, but there was a well-marked hydrosalpinx. It is worthy of note, as bearing directly upon the case, that the woman was 35 years of age, and she had suffered from intermenstrual pain only for five years. It will therefore be seen that this case differed entirely from the last one, in which the condition of intermenstrual pain had existed from childhood.

Two things, consequently, are clear about this case,—first, that the condition was distinctly an acquired one. Were it due to some condition of the ovary, then the Mittelschmerz should have been on the right side, whereas the pain was on the left, where the ovary was normal. Secondly, if it were due to painful ovulation occurring independently of menstruation, then it would have been expected that the intermenstrual pain would not have been of such recent origin. It is therefore by no means unlikely that this rare condition may be due to the over-distention of the Fallopian tube with fluid, and that the pain of the Mittelschmerz is associated with its expulsion.

This question of hydrops tubæ profluens I shall discuss later on.

Case 3.—A woman, 25 years of age, was brought to St Luke's Home some years ago suffering from severe dysmenorrhœa, the dysmenorrhœa occurring for the first three days of the menstrual period. Various remedies were prescribed, but she returned to the Home some months afterwards, being no better. A local examination was then made, when it was found that the uterus was somewhat enlarged and acutely retroflexed. The condition of the appendages was apparently normal.

During her stay in the Home, which was rather protracted, and before any operative interference had been undertaken, my attention was drawn to her having acute suffering in the left side, about fifteen days after menstruation, very similar to the pain she suffered at her menstrual period, but not so severe.

I examined her then, and found the condition in the pelvis as I have described, with the addition that there was a distinct fulness at the left side, the nature of which, at the time, I did not recognise.

On further inquiry, I found that she had had this mid-term pain, lasting for a few hours, regularly for four or five years.

With a view to curing her dysmenorrhœa the cervix uteri was dilated, and she was sent off in the hope that her dysmenorrhœa would be relieved.

Months later she was brought back again by her mistress, who said she was quite unfit for her duties as a servant, and must therefore, unless cured, leave her situation, all the more so as twice in the month she was temporarily *hors de combat*.

I am not perfectly sure what the further treatment was which she underwent for her dysmenorrhœa, but, whatever it was, it was unavailing.

The case was brought to me after I came to be in charge of beds in the Infirmary, and after carefully considering the matter with the doctor in whose charge the patient had been, I somewhat unwillingly removed the ovaries. I found that there was well-marked hydrosalpinx of the left tube. The fact that this condition of the hydrosalpinx, of the size of a small hen's egg, was not found except on the one occasion referred to above, led me to the conclusion that it was one of those cases of hydrops tubæ profluens, and this conclusion was entirely supported by the subsequent history of the case; because, although the removal of her ovaries and tubes neither stopped her menstruation nor cured the dysmenorrhœa, the intermenstrual pain did not recur for at least a year afterwards, since which time I have not heard of the case again.

The four cases recorded by Priestly in the *British Medical Journal* for 1872, which appear to be the earliest recorded cases presenting this condition, have the following as their prominent features:—Pain, paroxysmal, in the region of the ovary, occurring during the intermenstrual period; in some cases continuing up to the commencement of the flow, in others stopping before then. The ordinary flow is usually scanty, but regular, and with no pain.

On Bimanual Examination.—In two cases tumour felt in region of broad ligament, adherent to uterus, elastic to touch.

In the other two cases only thickening in the region of the broad ligament.

Sorel records a case, presenting symptoms similar to those mentioned above, in which the condition existed for a great number of years; indeed, observation had been made during a period in which 147 menstrual epochs had occurred. The chief conclusion arrived at by this author was that the occurrence of the intermenstrual pain bore a more definite relation to the commencement of the period which followed it than to the period which went before, as there always elapsed fourteen days between the occurrence of the pain and the commencement of the menstrual period.

One of the most important contributions to the very limited literature of this subject is an article by Heinrich Fasbender, published in 1876, in the *Zeitschrift für Geburtshülfe und Frauenkrankheiten.* The case, which he quotes as having occurred in his own experience, presents the following features:—

An unmarried woman of 24, anæmic, with an anxious cast of countenance, had menstruated regularly since her fourteenth year. The flow was always sparing, and for a few days before its appearance there was a severe pain in the lower part of her abdomen, with gastric disorder, cachexia, and alternate sensations of heat and cold. For the past two years there had occurred, at the fourteenth to sixteenth day after menstruation, a disorder similar to that which accompanied the ordinary menstrual period, accompanied by a flow of mucus from the vagina so conspicuous as to have caused her to mention it without its being suggested to her. Her nervous system had become much affected by the pain and discomfort which she underwent, so much so as to have produced symptoms of hysteria and a mental condition bordering on melancholia.

Physical examination showed the presence of an acute anteflexion of the uterus, with chronic endometritis and colpitis, with lesions of the os. Nothing abnormal was found in the uterine annexa. On seeing her again at the time of her intermenstrual pain, he came to the conclusion that the mucous discharge was most copious when the feeling of heaviness in the pelvis was most marked, pointing to a congestion in the pelvic organs. Fasbender's view of the etiology of Mittelschmerz is that, accepting Pflüger's theory of menstruation, we have in some cases a premature summation of nervous stimuli in the ovary, with the occurrence of ovulation, caused either by a delicately organised and excitable state of the whole nervous system or of the nerves of the ovary, the latter state produced by a pathological condition of the ovary. This abnormal irritability leading to dehiscence of a follicle, some fourteen days before the proper menstrual period, produces the congestive condition of the pelvic organs found in cases examined at such a time.

In the discussion which followed the reading of Herr Fasbender's paper several additional cases were cited and opinions expressed.

Two gentlemen cited cases where the intermenstrual pain had occurred in women suffering from anteflexion of the uterus; and a third suggested the anteflexion as the cause of the Mittelschmerz, the pain being due to contraction of the uterus, trying to expel retained blood, etc. To this it was replied that in the observed cases no contractions of the uterus could be discovered, and further, anteflexion was not present in all cases of Mittelschmerz, while if it were caused by anteflexion, Mittelschmerz would be a much commoner symptom than it is.

Mittelschmerz with a slight flow of blood is also described by Herr Benicke as occurring in a case where there was a conical cervix with pinhole os, anteflexion of the uterus, and retraction of the utero-sacral ligament.

From the above notes, which, so far as I can discover, include a mention of nearly every case of Mittelschmerz which has been recorded, the condition, it seems to me, can be well considered as having three different manifestations.

1. A group of cases in which there is no external manifestation at all.

2. Those cases where the pain is associated with an escape of blood.

3. Those in which, as in two of my cases and some of the others, the intermenstrual pain is associated with a clear discharge.

It would be absurd to dogmatize upon the causes which give rise to this condition, or to lay down any hard and fast rules as to the pathological conditions necessary to its production, but it seems to me that the above classification gives a fair insight into the different states that may lead to the production of this somewhat unusual symptom.

(1.) With regard to those cases where no external manifestation accompanies the occurrence of Mittelschmerz, the explanation is probably to be found in the fact that ovulation and menstruation do not in these cases occur simultaneously; that, in addition, owing to thickening of the capsule of the ovary, or some such cause, dehiscence of the follicle occurs with pain.

(2.) Those associated with escape of blood. In all of these it will be observed that there was present more or less endometritis, anteflexion, and enlargement of the uterus, and, so far as I am able to judge, these were simply cases in which a slight intermenstrual flow, due to endometritis, was accompanied by well-marked pain during the passage of clots. Such a condition is well recognised and common, and scarcely, I think, should come under the category of Mittelschmerz at all. Still, it adequately enough describes a set of cases to which the Germans especially have drawn attention.

Lastly, with regard to those cases in which a leucorrhœal discharge is described as occurring with the Mittelschmerz, and where, just before the usual date of the occurrence of the pain, a swollen and fluctuating condition of the tubes was in some cases made out, I think there can be no question that the cause of the intermenstrual pain was to be found in hydrops Fallopii, reaching its full development at mid-term.

I am well aware that much doubt is now thrown upon the possibility of the existence of what is called "intermitting hydrosalpinx" or "hydrops tubæ profluens," the occasional sudden escape of fluid through a temporarily patent uterine end, with disappearance and diminution in size of the tubal dilatation. According to some, it is much more likely that these discharges pass, not through the cervix, but by a vaginal fistula communicating with the cyst. Either explanation is compatible with this view of mine.

In my case, in which a removal of the tubes and ovaries brought about a cessation of the Mittelschmerz, it may be urged that the pain had been ovarian, and that the removal of the hydrops did not lead to its cessation, but the removal of the ovary. Here I would remind you that colicky pain in the tubes in such a condition occurs, contractions of the sac forcing the fluid through a uterine orifice only partially closed; and also that pain may be due to discharge of uterine contents, the result of reflex contraction of a necessarily congested uterus. Thus it is more than likely that the pain was really tubal.

V.—DIABETES MELLITUS IN EARLY INFANCY.

By W. B. Bell, M.B., late House Surgeon, Royal Hospital for Sick Children, Edinburgh, etc.

J. C., æt. 3 months 5 days.

History.—(*a.*) *Present Illness:* About a month before I was called in, on the 24th November 1895, the parents noticed that the child was very restless, afflicted with the most intense thirst, and required a large quantity of fluid in addition to the breast. They also noticed some increase in the amount of urine, and that there was a good deal of cutaneous irritation around the genitalia and thighs. Occasionally the child was very drowsy, and his breath had a peculiar odour. (*b.*) *Previous Health:* Always a very healthy child. He was born as a face presentation, and the labour was protracted and difficult, but not instrumental. (*c.*) *Family History:* Parents both alive and healthy, one sister healthy; one aunt on father's side of the house died from *diabetes mellitus,* and his maternal grandfather from *phthisis.*

Present Condition (November 24, 1895).—*General:* Well nourished, fat, male child. *Urinary:* Urine in excess, but amount not estimated nor specific gravity ascertained. Clear, and with a sweet taste. When tested by Fehling, Moore's, and Johnson's picric acid test, contained a large amount of sugar. Microscopic examination normal. *Cutaneous:* Marked weeping eczema of the privates and thighs, especially in the folds. *Nervous System:* Child fretful and restless. *Alimentary:* Breath normal, excessive thirst, bowels regular. *Other Systems:* Normal.

Treatment and Progress.—I was in doubt, as I could find no hints in the books on pediatrics. The breast was continued, but the mother's diet was restricted on anti-diabetic principles. The child was given skimmed milk and water *ad libitum* when thirsty, and one ounce of raw meat juice per diem. For the eczema an ordinary dusting powder and extreme cleanliness.

November 28.—Child rather better; but as slightly drowsy, stopped the raw meat juice. Ordered bicarbonate of soda and grey powder. Urine still contains a large amount of sugar. *December* 2.—A post-mortem examination was made to-day, but nothing abnormal detected. The brain was not examined. Urine in the bladder loaded with sugar. The parents state that on November 30 the child became very drowsy, and lay with its eyes half closed, breathing snoring and irregular, became more comatose, and died December 1.

Remarks.—I am recording this case in some detail as I believe it is one of great rarity. The various books on children's diseases hardly mention the subject, and I have been unable to find any record of a case in a child so young as three months. I see in Keating's *Cyclopædia* that Dr Roberts with his vast experience saw only one case in a boy of three years of age, and Dr Prout, in a series of 700 cases, saw only one in a child of five. Dr Nagle's statistics for the city of New York show only four cases under five years of age out of a total of 598 fatal cases in the course of ten years. Such statistics indicate the great rarity of the malady. As regards the diagnosis, I was led to suspect there was something wrong with the urine from the marked eczema; the other facts were elicited on inquiry. The treatment was of course more or less empirical and symptomatic. It was obvious nothing could be done for the child, but it occurred to me that it might be the right thing to try a modified anti-diabetic diet for the mother, especially as she had been in the habit of eating a large quantity of potatoes. I thought that as the child was well nourished it would be wrong to wean it.

From the history it seems that the child died from diabetic coma. I regret that I was unable to follow the case more closely, as the child lived in an almost inaccessible locality, but I think there can be no doubt as to the diagnosis, as the urine, carefully examined twice during life and once after death, on each occasion by three reliable tests, showed invariably a large amount of sugar, and the history, symptoms, and termination all point to an undoubted case of diabetes mellitus.

The family history of diabetes mellitus and phthisis is very instructive, and tends, I think, to point to heredity as the cause in this case, no macroscopic lesion being detected at the post-mortem examination.

The rapidly fatal termination of this case shows very vividly the extreme gravity of this disease in young children.

VI.—OBSERVATIONS ON MENTAL AFFECTIONS IN CHILDREN, AND ALLIED NEUROSES.

By William W. Ireland, M.D. Edin., Mavisbush House, Polton.

(*Continued from page* 505.)

The Overstrain of Examinations.

Amongst all the worries and disappointments of life which cause irritation and wear of the nervous system, the most threatening seems the widespread pressure on young people connected with school tasks, and competitions, and examinations. This has already excited discontent and criticism all over Europe, but, so far from abating, it seems likely to spread still wider and to invade all the ranks of life. We recently saw a proposal that engineers should not enter the profession without an examination, though it was naively admitted that some of the greatest engineers and inventors had been self-made men not likely to get in through such guarded portals; but the examiner has no love for invention, save the invention of new degrees, diplomas, and certificates, and little toleration for originality. It is likely that engineers and architects too will soon be in his rigid grip. The besetting sin of this personage seems to be, that he is never satisfied at testing the knowledge or skill of the candidate for the work for which he seeks to be qualified; but he must insist upon the poor student taking in a ballast load of irrelevant or useless knowledge, though his vessel is already loaded with cargo beyond the water-line. As medical advisers, we have frequently to condemn overstrain and overtasking of the memory, yet it is undeniable that those who seek to enter the medical profession are the most severely overtasked of all. The toil and vexation connected with examinations is getting more grievous every year. As Prof. Struthers has observed:[1] "When we reflect on the fact that rejections have run up to some 30 per cent. of the examined—twice what the proportion was twenty years ago, three times what it was thirty years ago—it goes without saying that there is something wrong in the present system of examination, or in the teaching, or in their relation to each other. It is not the student's blame. He is not less industrious than when I knew him twenty, thirty, or fifty years ago."

It is difficult to relieve the candidate. Studious young men are anxious for honours, and set a value upon a degree which is difficult to get; in fact, the numbers of rejections for examinations are paraded as a proof of the value of the pass. Attempts to lighten the load seem always to end by making it heavier. The subjects have been divided instead of being grouped together, and though this bit-by-bit system might appear as an advantage to the student, the result has been that each separate subject has been made more difficult. As Benedikt has remarked, the student is expected to know as much as each professor knows in his own subject, and even what he does not know.

The theory of the examiner seems to be, that the new medical student should realise the fancy of a man landed on some unknown island peopled with patients, with no means of assistance at his command, and should be able from his unassisted memory to prepare and form all the appliances of the healing art. He is expected to know, or at least is in danger if he knows not, the reaction of every chemical substance upon another, to treasure in his memory up to the hour of examination the lengthy and complicated processes by which different chemical products are extracted, and how the different articles of our huge Materia Medica are prepared, or rather how they are not prepared, because you can never get manufacturing chemists to make things after the expensive methods of the Pharmacopœia. People have sometimes wondered why the examiners in surgery never ask how surgical instruments are fabricated. The explanation is that the time-honoured range of questions in chemistry and materia medica is one of the survivals of which our medical schemes of education are full. The old barber-surgeons never made their own knives, but the old physicians and apothecaries gathered their simples under the planetary lights, and made their own tinctures and decoctions, when the lists of drugs were so small that they probably did not tax the memory more than the recipes and directions for puddings and sauces do to a cook. The list of things now in use is so enormous that no medical practitioner remembers them. He knows those he uses and the doses of the preparations which he uses; as for the others, he goes to a book when he wants to refresh his memory about them. Your professor of materia medica is always increasing his original load, and disdains to make things easy. How simple, for example, would it be to make the doses of all the tinctures from 1 drachm to 2 drachms, and all the infusions from 1 oz. to 2 ozs.; but, then, with a perversity which has cost prescribing practitioners not a little anxiety, some of the most powerful and dangerous tinctures have doses smaller than the common in capricious variety, needing separate exertions of memory for each.

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[1] "The Present Examination System," by John Struthers, M.D., etc., *British Medical Journal*, November 25, 1893.

The result of our continual progress in science in all directions is a great extension in our knowledge of observed facts. Thus the load upon the memory and the necessity for discriminating observation is always increasing, while the human intellect is a fixed quantity. We might help the rising generation by removing all artificial difficulties, as one of our main problems in mechanics is not only to increase force but to decrease friction. We should make our spelling phonetic, abolish the useless trouble of our weights and measures by adopting the metrical system, and leave the dead languages to those who have an especial taste for history and literature. We should thus gain more time for the teaching of real knowledge, and we shall never have too much. As regards the study of medicine, it seems to me quite enough that a student should know the ordinary laws and generalisations of chemistry, with a few practical illustrations; nor should he be expected to commit by heart the number of sepals and petals, adhesions of anthers, the shape of the embryo in the seed, and all the myriad details of the natural and unnatural orders devised by Decandolle. Whether a student remembers the number of incisors, canines, molars, and premolars in the different beasts, or knows anything about the testes of the leech, or similar matter, seems to me of no consequence. If he does learn such facts in obedience to the exigencies of the examiners, he drops them the moment he passes; when he gets through he recognises that about half his time has been consumed in needless and unprofitable tasks. I do not deny that all knowledge may now and then prove useful; but the question is, since we cannot know everything, what is its relative value? Cultivation is the economy of force; of all forces the most precious is mental force, and how it is wasted! After paying toll to the dead languages, chemistry, botany, and zoology, the young man comes to the study of medical science with blunted attention and memory sickened with the load of facts which he has had to accumulate. The students come with a fresh desire for real knowledge; but they soon perceive that they must cram, for the intellect of Aristotle himself could not acquire a real instead of a word knowledge of all that is asked of them in the time allotted.

The result of this continuous strain, the prolonged anxiety and the disappointment caused by repeated rejections, too frequently ends by injury to the health, exhausting the brain, and leaving behind a disgust of knowledge that is slow of passing away. The most common morbid results seem to be kidney disease and neurasthenia. Young women preparing for examinations, governesses and female teachers, seem often to suffer from chlorosis and neuralgia, and are especially prone to become inmates of lunatic asylums. Suicides are becoming more common with scholars, especially in Germany, and we have known some such instances in our country.

It is sometimes said that those who are unfit to stand the strain should not undertake to enter professions and pass examinations, and we should certainly not encourage them to do so; but we have known many instances where men, at the outset apparently strong and healthy, have broken down through being subjected to needless tasks. Though there is a great deal of discontent, sometimes venting itself in complaints, it does not strike me that the evils connected with it are likely to become less or the load made lighter. Each professor has a rooted conviction that his own speciality is of surpassing importance. Their interest, their self-importance, their conscientiousness, all drive one way to make them hold a high standard. To their ordinary classes they add practical classes, and then they prove, by plucking 75 per cent. of their students, of what small value their teaching is. Perhaps the Government will remember some day that students of medicine are vertebrate animals, and might thus go under the Vivisection Act. Knowing the strength of the different medical corporations, people hesitate to point out such evils; but the most scathing criticisms have come from men who are or have been retired professors and examiners.

This inordinate desire for examining and being examined is not confined to the medical profession; it pervades wellnigh all the branches of learning. In my opinion it has already inflicted enduring injury to many of the studious class in our population, and is likely to go on helping to increase the tendency to exhaustion and irritability of the nervous system;

instead of increasing the tone of knowledge it has done the very contrary. Learning is now regarded as something to gain profit and distinction. The stamp of talent is put upon the back of heavy diligence, and the knowledge certified is of an unhealthy and evanescent growth. Cardinal Newman has eloquently observed that "self-educated persons are likely to have more thought, more mind, more philosophy than those earnest but ill-used persons who are forced to load their minds with a score of subjects against an examination; who have too much on their hands to indulge themselves in thinking or investigating; who devour premises and conclusions together with indiscriminate greediness; who hold science on faith, and commit demonstrations to memory; and who too often, as might be expected, when their period of education is passed, throw up all they have learned in disgust, having gained nothing by their anxious labours except, perhaps, the habit of application."

The evils of overtasking at schools and colleges have been even more felt in Germany than in Britain; there has been more time for these evils to show themselves. Virchow and Westphal have pointed out its weakening effect upon scholars in the more advanced schools, and Snell and others its bad effect on the brain.[1] The German Union for the care of public health delivered as their opinion that the present system of instruction, especially through overtasking children's brains and repressing their muscular activity, has an injurious effect upon the general growth and the organ of vision. Cohn, who collected observations of 40,000 pupils in Germany, found that the more advanced the schools were the more shortsighted scholars. The shortsighted comprised in the village schools scarcely 1 per cent. In the primary schools, 5·11 per cent.; girls schools, 10·24 per cent.; high schools, 20·40 per cent.; gymnasia, 30·35 per cent. Reuss, examining 406 pupils in a middle school in Vienna, found that only one-third of the whole had normal vision. In the under classes of the gymnasium, 39 per cent.; in the upper classes, 51 per cent. of the scholars were myopic, or to consider the ages from nine to twelve years, 34·7; from thirteen to sixteen, 46; and from seventeen to twenty-one, 53·9 per cent. were shortsighted. Shortsightedness is often hereditary; but oculists generally hold that it may be acquired in childhood by the strain of near vision with bad lights. The hearing has also been found to be impaired, though in a lesser degree than the sight. The general result has been stated to be a culture of superficial character with a tendency to overwrought brain, nervous weakness, and sexual irregularities. Dr Leo Burgerstein[2] has pointed out the saving effect of the attention to athletic sports in the older English schools against the evils following over-study and book-learning. He would fain see these manly sports introduced into his own country. But it is a hard and thankless task to try to reform the routine of our educational systems. Though their shortcomings and evils have been often exposed, little has been done to remedy them, and new abuses appear.

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[1] See a discussion on the subject in the *Allgemeine Zeitschrift für Psychiatrie*, Band xxxviii., Heft 2.

[2] *Die Gesundheit's Pflege in der Mittel-Schule*, von Dr Leo Burgerstein Vienna, 1887.

INCREASE OF NERVOUS DISEASES.

As the outcome of the whole inquiry, we may say that in these times people are exposed to many causes tending to produce irritability and exhaustion of the nervous system which have been efficacious in increasing the number of nervous diseases and bringing hitherto unobserved forms into prominence; and if there be in Europe no actual increase in the total numbers of the insane, some forms of insanity, especially general paralysis, have become much more frequent.[1] It appears to me that the disease called neurasthenia or cerebrasthenia, forms of which have been described as *Kopfdruck*, or irritable brain, are much more frequent in the present day. This is especially true of North America. There seems no doubt that nervous diseases are greatly increasing on this continent. Dr George Beard[2] puts the question, "Why are the Americans more nervous than any other people on this planet?" He attributes this to the dryness of the atmosphere and to the extremes of heat and cold in the climate of the Northern States, the bitterness of the winters and the extreme heat of the summers, which render outdoor exercise less agreeable, combined with the strife and struggle for bread and competence against inordinate competition, and the worry and concentration of work made both possible and necessary by the railway mail service and the telegraph. I felt in my own person the more stimulating character of the air in Canada and the Northern States, and it appeared to me that the efforts needed for the middle classes to maintain their insecure position were more severe in the States than in our own country. The increase in insanity amongst the coloured population since the emancipation of the slaves at the close of the war between the Northern and Southern States, of which there can be no doubt, affords a noteworthy proof that a race may be subjected to new social conditions which prove too great a trial for the sanity of many of its members. We may fairly assume that whatever too severely tries the nervous system of the mental health of the one generation will appear in their descendants, and it is necessary not only to study what is past, but to consider what is likely to ensue from the potential causes of nervous disease, idiocy, and insanity.

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[1] This has been shown in a convincing manner by Krafft-Ebing, "Ueber die Zunahme der Progressiven Paralysie," *Jahrbücher für Psychiatrie und Neurologie*, 1895, p. 127.

[2] "American Nervousness: its Philosophy and Treatment," *Va. Med. Monthly*, July 1879.

Classification of Idiocy.

One of the most obvious divisions of idiocy is into congenital and acquired; but many of the factors of born idiocy may continue to act after birth, and we should thus need a double classification without a real distinction. Above twenty years ago I proposed a classification based upon the observation of clinical symptoms and pathology. It was favourably received, especially by my genial friend the late Dr Skae of Morningside, who added my forms to his own classification of insanity. It was characterised by Dr Bourneville, in a lecture at Paris, as *peu scientifique mais suffisamment clinique.* It is difficult to make a scientific nosology till the pathology of diseases is worked out. The classification enabled me to arrange what I wanted to say, and to separate some defined forms from others which were not so clearly understood. Since then new forms have been described, some of them by Bourneville working on the same lines as myself, and the connexion of others has been more clearly made out. The progress of inquiry has thus enabled me to make a few changes and corrections in my classification, which is now presented as follows:—Genetous Idiocy. Microcephalic Idiocy. Eclampsic Idiocy. Epileptic Idiocy. Hydrocephalic Idiocy. Paralytic Idiocy. Cretinism (including the Endemic and Sporadic or Myxœdematous forms). Traumatic Idiocy. Inflammatory Idiocy (the result of Encephalitis). Sclerotic Idiocy. Idiocy of Deprivation.

Genetous Idiocy.—Instead of congenital I used the word genetous, which enabled me to separate some forms from microcephaly or congenital hydrocephalus and other varieties. It was clear to me at the time that what appeared genetous idiocy might include cases in which the pathology was different, in which early inflammations had produced retrogressive and destructive changes, and cases in which there was simply a lack of development indicated either by arrested or incomplete structure of parts of the brain, or by the persistence of early forms of its histological elements.

During the last fifteen years a few studies of the nervous system of the idiot have been made by skilful observers. These, scattered over the medical literature of Europe, are difficult to collect. Genetous idiocy, as its name indicates, is the result of causes acting before birth. In addition to deficiency of the brain there are modifications or defects throughout the whole organism, and no doubt more would be found if, instead of confining themselves to an examination of the brain, dissections could be made of the whole body. I have, for example, seen a nodulated form of the kidneys and abnormalities in the muscles in the few dissections which I have made. Varieties in the arteries have also been noticed. The symptoms observable in life are abnormalities in the jaws and teeth; the teeth are ill placed, have strange shapes, and decay early; the palate is high or saddle-shaped. There are varieties in the external ears difficult to classify, and not infrequently abnormalities in the fingers and toes, and in the genital organs. Such abnormalities affect one idiot and not another; sometimes we do not find them at all. The health is often feeble, the pulse weak, the temperature low, and the power of generating heat less than usual. The child is slow of learning to walk and to speak, and other symptoms of deficient mental power are observable; but though dull and sluggish, he often improves more than those cases in which the mental deficiency can be traced to disease, or in which the child, though wanting in intellect, is lively and apparently well made.

The Development of the Brain in Infancy.

A consideration of the difference between the structure of the brain of the infant and the adult will help us towards understanding the operation of the various causes of idiocy.

A child comes into the world with one-third of the volume of his brain; he acquires the second third before twelve months are over, and the rest between that time and the twenty-first year. In the first year of life the brain grows about 450 grammes, more than 1 c. c. a day. The development of the skull goes on from birth to the seventh year. About this time the cranium has well-nigh gained its full size, and there is a pause till the commencement of puberty, when a further period of increase begins, which goes on till the completion of the growth of the cranial bones. The brain in the new-born infant is so soft that it is difficult to examine the structure. The first elements are granular and fatty cells. Dr Fuchs found the pyramidal cells recognisable in the brain of the new-born infant, and Deiters cells in their normal arrangement in the brain of the child five months old. He found the typical fifth larger in the cortex of the child aged eight months.

For a long time microscopists paid scant attention to anything but the pyramidal nerve cells, to which they were pleased to assign all the most important functions of the brain. Availing himself of the new processes of dyeing the tissues, Tuczek had the merit of calling attention to the nerve fibres and the changes in their structure in disease.

Fibres with the axis cylinders appear first in the medulla oblongata, and then extend upwards to meet those in the brain. In the latter the nerve fibres with axis cylinders appear first in the medullary, and then in the cortical matter. Fuchs found these fibres in the brain of the child towards the end of the first month. Tuczek found them in the last month of intra-uterine in the medullary and cortical substance of the paracentral and median lobes, then in the occipital, and latest in the frontal lobes. They then go on developing from the centre to the periphery, and meeting one another through the whole encephalon. In the child of eight, and even perhaps of seven years, the fibres of the cortex and medullary substances have taken the same arrangement as in the adult.

Dr Vulpius[1] has studied the fibres which horizontally traverse the surface of the hemispheres, which he calls the tangential fibres. These appear on the outer layer of the cortex in the fifth month of life; in the seventh month the tangential fibres can be found in the deep layers, while in the layers between the cross fibres only appear after a year. The complete development of nerve fibres in number and calibre is finished about the seventh or eighth year. It is during the development of the brain and nervous system before birth and during these first years of growth that malnutrition and perverted action occur, which result in defective mental power.

PATHOLOGY OF GENETOUS IDIOCY.

Unfortunately our knowledge of the structure and mechanism of the brain does not throw much light upon its functions. When one learns the anatomy of the heart he is at no loss to understand how it acts as a pumping machine. With a farther knowledge of the arteries, capillaries, and veins the circulation of the blood is made clear, and one can at once understand how anything out of gear would affect it. In like manner, when one knows the structure of the eyeball and the laws of light, he readily comprehends how any change in the visual apparatus should affect the sight.

Even a knowledge of the anatomy of an organ like the kidney takes us far into its physiology. But after looking through many microscopes, and reading hundreds of pages describing the morphology and histology of the brain, we are scarcely any wiser as to how its structure is adapted for its complicated functions. It is like a scroll which we cannot decipher. We know that it has a meaning, and that if the characters were altered or the lines transposed the significance would be different, or there would be no significance at all. The utmost which we have made out amounts to this. If the three, five, or eight layers described as making up the cortex of the brain were transposed, or if some layers were wanting, or if the minute structure and the peculiar arrangement of the nerve cells, pyramidal, giant, spindle, spider, and neurogliar, the nerve fibres, molecules, and granules, and the distribution of the vessels were made different, the sensory and mental manifestations would be deranged in one way or another. Moreover, we know that lesions affecting the growth of the brain in early life have a decided and enduring effect upon the mental powers.

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[1] *Archiv für Psychiatrie*, Band xxiii., p. 775.

In genetous idiocy abnormalities in the form of the encephalon are often visible to the naked eye. The most common are—the convolutions are coarse and simple, with few secondary folds; or the gyri are small and slender. Confluence of the fissures is sometimes a marked feature in the idiot's brain. The occipital lobe in some cases fails to cover the cerebellum. The cerebellum in size and weight is larger in its ratio to the cerebrum. In the idiot the cerebrum is generally lighter; in some cases, however, it is up to and even beyond the normal weight. There are asymmetries of the base of the brain often accompanied by irregularities in the sphenoid and occipital bones. In a few cases there are deficiencies or unusual shortness of the corpus callosum.

In many cases the appearance of the brain to the naked eye is insufficient to account for the mental want, and a finer examination is desirable. Mierzejewski, one of the first to make sustained microscopical researches in idiocy, has observed[1] that a brain which in the external arrangement of its convolutions presented the fœtal type, had its nervous elements as well formed as in brains completely organised. "In this case the morphological arrest of the convolutions was accompanied by a perfect development of their histological elements, and the external form was not in accordance with the delicate structure of the tissue. Here there was not, consequently, a true arrest of development (morphologic and histologic), but a deviation from the type of normal development."

"Up to the present time," goes on the Professor, "I have not met with a single description of the brain of an idiot in which the morphological arrangement of the convolutions and the microscopic structure of their nervous elements presented the embryo form. The case observed by Harck, and that by myself, are perhaps the only exceptions in this respect. We must regard these exceptions, moreover, with some reserve."

Later observers have found an arrest in the histological elements of the brain in idiots. Bevan Lewis[2] mentions the globose cell with a single delicate apex process with a perfectly uniform rounded contour, which is met with in man only in forms of developmental arrest in idiocy and imbecility.

The latest studies of the histology of the brain in idiots known to me are those of Dr Carl Hammarberg.[3] After observing the normal structure of the brain, he made a laborious examination of the brains of nine idiots and imbeciles. He found the mental deficiencies to correspond with a scarcity of cells capable of normal function in the cortex, and that this scarcity of pyramidal cells is owing either to the brain tissues being arrested in the stage it reaches in the fœtus or in early infancy, so that few new cells reach their higher development. In some cases examined it appeared that only a part of the brain had been arrested in its normal development; the growth of the rest seemed in some way injured functionally, or there was a proliferation of new cells which are not capable of discharging a complete function. If only a small portion of the brain be arrested in growth and the remaining portions take their normal development, though having fewer cells than usual, the mental deficiency is less marked,—the individual is not idiotic, but weak-minded. In one case, at least, he found that the cells after attaining their normal growth had degenerated.

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[1] *Journal of Mental Science*, January 1879.

[2] *Text-Book of Mental Diseases*, p. 70.

[3] *Studien über Klinik und Pathologie der Idiotie nebst Untersuchungen über die normale Anatomie der Hirnrinde*, von Dr Carl Hammarberg; *nach dem Tode des Verfassers aus dem Schwedischen übersetzt*, von Walter Berger; *und herausgeben*, von Prof. Dr S. E. Henschen, Upsala, 1895.

Many observers have stated they found in the brains of idiots that the pyramidal cells were arranged in an irregular manner, and that their processes often took unusual directions. Dr Hammarberg treats this as an error of observation. It is, he writes, not unusual to find pyramidal cells in the normal cortex presenting their largest diameter horizontally to the cortex, while the apex processes have to wheel round to approach the surface. He observes that in none of the idiots' brains which he examined was the so-called disorder of cells more notable than what he found in brains of persons of normal intellect. Nothing is more striking than the exact relation which Dr Hammarberg makes out between the number of the pyramidal and spindle cells and the mental deficiency: where the cells are wanting, or very few, the idiocy is profound; where there are more cells there is more intellect. He seldom notes any alteration in the nerve fibres or in the vessels of the brain.

Dr Hammarberg's investigations were unfortunately cut short by an untimely death. The number of brains examined by him is not large, and the clinical history of some of his cases could not be well ascertained. Some were undoubtedly instances of genetous idiocy; others were affected with eclampsia or epilepsy. Were his researches accepted without any hesitation, they would be a strong confirmation of the common assumption that the larger nerve cells have a preponderating rôle in mental processes. So many other observers have recorded similar results, that Bernardini,[1] after reading the cases of idiocy recorded in medical literature, has come to the conclusion that the diminution in the number of the nerve cells in idiocy, and the changes in the form and number of their prolongations, ought to be ranked as now sufficiently proved. Bourneville in one case found the larger pyramidal cells swollen and hyaline with granular nuclei. Sometimes the nerve cells are infiltrated with granular pigment or calcareous matter. Vacuolation of the nuclei has also been observed. Microscopists have also described a proliferation in the cells of the neuroglia, and an increase in the number of spheroidal and ovoid cells; amyloid degeneration has also been observed. Alteration in the coats of the vessels has been noticed, and sometimes the vessels have been found obliterated.

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[1] *Archivio Italiano per le Malatie Nervose*, fasc. i. and ii., 1888.

It must be borne in mind that such lesions are not found in all cases. In some cases where a careful scrutiny has been made by competent observers, with every means of examinations, the lesions found have been very slight, such as that the nerve cells have been found slightly granular, or no lesions at all could be found.

The most attention has been expended upon the nerve cells; the fibres have been neglected. Dr Otto Klinke,[1] using Exner's and Weigert's staining methods, examined the distribution of the tangential fibres of the cortex in the brains of seven cases of idiocy and five cases of insanity. He found the number of such fibres much diminished in idiocy, and also in senile dementia. The lower forms were most affected. The most marked diminution was found in the brain of an imbecile who died of general paralysis.

DEFICIENT BLOOD-SUPPLY TO THE BRAIN.

In post-mortem examinations of genetous idiots I have generally found the heart to be small and weak, the valves often incomplete, or the foramen ovale only partially closed. The pulse is generally feeble and the circulation languid, hence it may be guessed that the mental torpor is owing to a deficient blood-supply to the brain, especially in the cases in which to all appearances no fault can be found with the structure of the nervous centres. It is amazing how persistently neurologists overlook the prime importance of a supply of warm arterial blood to the functions of the brain. We know what a large volume of the circulating fluid actually is sent to that organ, and not solely for the purposes of nutrition or repair of waste. In fact, when repair is most actively going on, as during sleep, the supply of blood is diminished. We know that when the circulation of blood is lessened, even by pressure on the carotids, that mental manifestations are suspended. Thus the functions of the brain are dependent upon a certain interaction between the blood and the solid tissues. A confirmation of this view has been given by the remarkable results of the administration of the thyroid juice of animals in one form of idiocy in which the thyroid gland is wanting. It has been observed that in a few days the mental torpor began to disappear simply after the supply of a small quantity of this juice to the blood. It is to be kept in mind that in several cases in which a careful examination was made, pathologists have failed to find anything abnormal in the brains of these sporadic cretins.

(*To be continued.*)

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[1] *Archiv für Psychiatrie*, Band xxv., p. 450.

VII.—THE PHYSIOLOGY OF THE CARBOHYDRATES: A REPLY TO DR PAVY'S "EPICRITICISM."

By D. Noël Paton, M.D., F.R.C.P.E., Superintendent of the Research Laboratory of the Royal College of Physicians of Edinburgh.

At the conclusion of an article on our present knowledge of the Physiology of the Carbohydrates, published in the *Edinburgh Medical Journal* for December 1894, I said:—"In endeavouring to give a fair statement of the present state of our knowledge in regard to the relations of sugar in the economy I have been compelled to subject Dr Pavy's observations and theories to adverse criticism. But this I have done in no spirit of animosity, for no one can more admire the devotion with which he has given his time and energy to the investigation of a problem of such profound scientific interest and deep practical importance. The greatest compliment which one scientific worker can do another is to carefully study his work, and to frankly state his opinions upon it. For truth, like distance, is better learned by double than by single vision."

Dr Pavy has now published what he entitles an "*Epi*criticism," (J. & A. Churchill, 1895), in which, instead of taking my criticism in the spirit in which it was offered, he chooses to ascribe to me discreditable motives, and accuses me of wilfully misrepresenting his meaning for the purpose of getting the better of him in argument.

Before replying to his "Epicriticism," I would state, first, that my motives were simply those set forth in my article; and, secondly, that any misrepresentations of which I have been guilty were not made with malicious intent, but were the result of misconception of Dr Pavy's work.[1]

I shall take no further notice of the personal animus which Dr Pavy has unfortunately introduced into the discussion. His opinion of my character and conduct, and my opinion of his, can have no interest for anyone but ourselves, and has no bearing on the fate of sugar in the animal body.

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[1] When I sent him the article in question I received from him the following letter:—

"35 Grosvenor Street,
"Grosvenor Square, W., *Dec.* 1, 1894.

"Dear Dr Paton,—Accept my thanks for having sent me a copy of the *Edinburgh Medical Journal* containing your communication on the 'Physiology of the Carbohydrates.'

"I recognise and appreciate the spirit in which you have written. There ought to be no personal consideration in this matter. I take it we are both actuated by the same motive, and simply seek after truth. Your statements require a rejoinder. I will deal with them *seriatim*, and furnish a categorical reply. In doing so I hope you will find that I shall keep to the maxim that I have said ought to be observed by both of us as scientists.—Yours faithfully,

"F. W. Pavy."

How far his action harmonizes with his "maxim" I can leave it to his readers to judge.

With his dispute with the Council of the Royal Society I have nothing to do. I did not consider it "obligatory, in vindication of the position in which I stood before the Royal Society, that I should make endeavour to upset his (Dr Pavy's) work" (p. 66).[1] I was and am perfectly willing to leave the matter to be judged by physiologists familiar with the subject.

But I did object, and do object most strongly, to his publishing a book for medical men, entitled *The Physiology of the Carbohydrates,* in which not a trace of the mass of evidence opposed to his views is considered. Had he published it as a contribution to the subject addressed to physiologists already familiar with both sides of the question, such omissions might have been pardoned, but in publishing the work with such a title he is dealing hardly fairly with the general medical reader.

Dr Pavy cannot expect others to have the same unbounded confidence in his work which he expresses on p. 13. However satisfactory his work may be to himself, by the rest of mankind it must be considered side by side with the work of other investigators.

A *résumé* of the work of these other investigators I attempted to give in my article, and Dr Pavy is mistaken in saying (p. 14) that I have "contented myself with drawing from the conflicting testimony existing the material that has fallen in with what I wanted." That this is not so—that I have not suppressed evidence favouring his views—he himself admits on p. 110, and he nowhere, in support of this contention, brings forward the work of others not quoted by me.

When Dr Pavy wants support for any of his statements, in spite of his contempt for the work of others, he habitually says,—"authorities" speak of this or that (pp. 103, 109, and 111), or "modern accredited authority" (p. 116) gives such and such results. Why does he not give his authorities, so that it might be possible to consider their value?

Dr Pavy's Accusations of Misrepresentation.

Dr Pavy accuses me of consistently and persistently misrepresenting him. He says:—"It is a relief to come across a statement entirely free from misrepresentation" (p. 138), and speaks of my article as being "freely interspersed with attacks founded on unpardonable misrepresentations." As a matter of fact I find, to my sincere regret, that upon three points I have formed misconceptions of Dr Pavy's results which have led me to misrepresent his meaning. Let me add, however, that fortunately these points are of minor importance, and without direct bearing on the question of the fate of sugar.

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[1] Throughout this article the pages refer to the reprints of my article, and to Dr Pavy's "Epicriticism."

The first of these is in regard to the amount of carbohydrate which Dr Pavy maintains may be cleaved off from the proteid substance, and upon this misconception certain arguments on pp. 10 and 16 of my article are founded. But if these arguments be struck out, the evidence against Dr Pavy's theory is not affected.

The second is in regard to the nature of the sugar in the blood in the general circulation. Upon it no argument is based, so that it need not be discussed here.

The third point is in regard to the range of variation in the reducing power of the alcoholic extract of the portal blood. In my statement on p. 8, the 10 should have been 18. The error is due to the printer, but I should not have allowed it to pass.

Correctly stated, in Dr Pavy's Experiment II., p. 104, *Physiology of Carbohydrates*, the first sample of blood withdrawn had its reducing power raised by sulphuric acid by 18 per cent., while the second had its reducing power raised by 27 per cent.

In Experiment II., p. 105, the first portion of blood had its reducing power raised by sulphuric acid by 20 per cent., the second portion by 30 per cent.

Taking, then, these figures instead of those given in my article, I still think that they strongly "militate against any definite conclusion being drawn from the observations."

These are the only misrepresentations with which I can charge myself. I regret that I should have allowed myself to fall into such errors, and I apologise to my readers and to Dr Pavy for having failed to truly represent his results.

Dr Pavy very bitterly complains of my misrepresentation of his consideration of Lépine's work. I do not blame myself for omitting to consider a sentence beginning (p. 111), "Weighty objections have been raised by various authorities," without any reference to the authorities, and I do not see that the use of a capital S at the beginning of my quotation injured his contention in any way.

As to the other misrepresentations with which I am charged I simply deny them, and I consider that I have represented Dr Pavy's results and arguments as fully and fairly as it was possible to do without reproducing whole pages of his book, which my readers as medical men were supposed to have read or to be about to read.

I leave it to those who will take the trouble to peruse my original article as well as Dr Pavy's "Epicriticism" to judge in how far I have dealt unfairly with him.

METHODS.

In my article the methods used by Dr Pavy were only cursorily considered. Dr Pavy defends them at considerable length, and as the value of his work and the validity of his conclusions depend so greatly upon these methods, they require careful consideration.

1. My objection to the alcoholic method of extracting sugar on the ground that varying proportions of maltose and of the lower dextrins may be taken up will not, I think, be considered a "gratuitous innuendo" by those who know about the relative solubility of the carbohydrates in different strengths of alcohol.

Dr Pavy uses alcohol (absolute?) or methylated spirit,—a weaker spirit,—and he puts into this the water containing blood or tissue in the proportion of 30 to 400, and thus dilutes his alcohol still further. In such a spirit, even if over 90 per cent. of alcohol, the sugars and dextrins will be taken up in varying proportions. It is not as if there was a hard and fast line between carbohydrates soluble in, and carbohydrates insoluble in such alcohol, but a continuous chain of intermediate bodies exists, and the amount of these taken up or left will depend upon the amount of dilution of the alcohol. In his "Epicriticism" Dr Pavy admits this difficulty, but he does not seem to appreciate fully the modifications in his results which it may introduce.

2. In regard to Dr Pavy having shown, by "subsequent aqueous extraction" (p. 38), that all the glucose had been removed by his alcoholic extraction of blood and tissue, the results of Schenck must be borne in mind.

To the work of this observer I have already called Dr Pavy's attention, but he still continues to ignore it entirely. Coming as it does from Professor Pflüger's laboratory in Bonn, it must be received with respect, and cannot simply be ignored as Dr Pavy tries to ignore the admirable work of Panormoff, the "Privat-Docent of the University of Kazan" (p. 128). It has a most important bearing on all Dr Pavy's work, and is worthy of his careful study and consideration.

By adding weighed quantities of pure glucose to defibrinated blood, to serum, and to each of the two proteids of the serum, Schenck found—I quote his words—"that after coagulation only a part is to be found in the filtrate. If the coagulum has been washed with water or alcohol until the watery or alcoholic extract contains no more trace of a reducing substance, and the coagulum is then boiled with dilute hydrochloric acid, reducing substances may be recovered in the fluid, which, in successful cases, correspond to the amount of sugar lost. It is highly probable from this that the glucose is combined with the albumins of the blood." In the course of his paper he indicates the difficulty introduced by the sugar naturally present. It must be remembered, too, that the deficits of sugar are not trifling, but amount to as much as 46 and 47 per cent. of the amount added, and the difficulty in the extraction of added glucose will also be experienced in extracting that normally present. Thus the failure to get sugar on subsequent aqueous extraction does not prove that all the sugar has been removed.

3. For evidence of the presence of reducing substances other

than sugar in the blood, I would refer to the researches of Otto (*Pflüg. Arch.*, Bd. xxxv. p. 467), who shows that after fermentation the blood possesses a distinct reducing power, and that the non-fermentable reducing substances vary in amount under different conditions.

4. Lastly, the cupric oxide reducing test depended on by Dr Pavy in his quantitative work is open to endless fallacy unless it is used on solutions of the carbohydrates freed from other reducing substances and other substances which, when treated with an acid, yield reducing agents. The alcoholic extract of blood and tissues contain many other substances soluble in alcohol besides sugars, and Dr Pavy takes no precaution to ascertain in how far the reduction is due to these bodies.

5. As to the extraction of glycogen, if Dr Pavy had desired his method to be accepted in the face of the results of Dietl and Vintschgau he should have given figures to show that 10 per cent. solution of caustic potash after boiling for half an hour does not destroy the glycogen. These figures he gives only now in the "Epicriticism," p. 42.

6. His method of estimating glycogen is vitiated by his alcoholic extraction of sugar. If dextrins are present they will to a large extent be left in the residue after extraction with alcohol. Dr Pavy says that these dextrins are destroyed by boiling with potash, but he does not state to what extent this destruction takes place, or what loss of carbohydrates results from it. By his method he has the possibility of the presence of varying quantities of dextrins with his "sugar" on the one hand, and with his "glycogen" on the other; and on inverting, the result expressed as glucose must give a very inaccurate and imperfect idea of the nature of the carbohydrates present.

After this further consideration, I can only say that I think the criticism of his methods in my article erred on the side of leniency, and that results obtained by the use of such methods must be misleading.

Hepatic Glycogenesis.

The great and central question at issue in Dr Pavy's work is this: Is there during life a constant production of glucose in the liver? It is upon this point that his theory must stand or fall. If the evidence here is against him, if he fails to prove that the liver is simply a sugar-stopping and not also a sugar-producing organ, his "system of knowledge" (p. 135) must collapse. In his book he ignored all evidence on the subject except that of his own work. He has now criticised some of the experiments opposed to his views, and considers them entirely valueless. I have already indicated in my article where the reader may procure some account of the work bearing on this subject, and I would now only say that the question must be considered as a whole, and that the indirect evidence of the work of Külz, E. Voit, Demant, Böhm and Hofmann, and of Cavazzani must be kept in view, as well as the more direct observations of Bernard, Lehmann, and Seegen, and the other investigators mentioned in my article.[1]

After a study of the whole question I consider that the *mass of evidence* clearly points to the *production of sugar in the liver*, and find it inconceivable that this process, which even Dr Pavy admits does occur in the liver under many different conditions during life and after death, is due to the sudden establishment of a totally new action, and not simply to the exaggeration of a normal function. That the vast majority of physiologists in all countries are of the same opinion is indicated by their teaching and writings.

I stand by all my objections to Dr Pavy's method of comparing the portal blood and blood of the right ventricle *from different animals and after death*. The animals used in his experiments on the portal blood were pithed, then the abdomen was opened, then the portal vein was exposed, then opened, and then the blood procured. I do not know how long this procedure takes, but it appears to me that whether the process is short or long, such a dead dog is in a far less normal condition than Seegen's animals. Dr Seegen might well say of Dr Pavy as he says of Seegen: "But I must speak of his work as utterly devoid of value from a physiological point of view . . . and it is a pity so much good intention and labour have been spent in so futile a way."

Another argument upon which Dr Pavy bases his objection to the glycogenic theory, namely, the condition of the urine, was not dealt with so fully in my article.

According to Dr Pavy, whenever the amount of sugar in the blood increases, a proportionate increase in the urine takes place; in fact the sugar (p. 63) "is simply filtered through the system, and escapes with the urine." (See also *Croonian Lecture*, p. 78.)

Now, Seegen finds in one case of diabetes 0·254 per cent. of sugar in the blood and 2·4 in the urine, and in another 0·314 per cent. in the blood and only 1·4 in the urine. Such results are clearly opposed to Dr Pavy's contention. Even his own figures (*Croonian Lecture*, p. 80) fail to support his conclusion. In one case he finds 0·2789 per cent. of sugar in the blood and 4·549 in the urine, and in another 0·1848 per cent. in the blood and 4·811 in the urine.

But his views on the carbohydrates of the urine afford the strongest evidence against this simple relationship between blood sugar and urine sugar.

According to his observations (p. 120), after *glucose* is introduced into the circulation, there appear in the urine carbohydrates of lower reducing power even than maltose, and therefore presumably belonging to the group of polysaccharids. In fact, the sugar, according to his idea, must have undergone "the synthesizing and dehydrating" action of living protoplasm (p. 72), must have taken part in the metabolism before being excreted. How is this to be reconciled with its being simply "filtered through the system"?

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[1] The presence of sugar in the blood in undiminished amount during starvation is a fact strongly opposed to Dr Pavy's views.

I said in a foot-note in my paper published in the *Philosophical Transactions* before the appearance of Dr Pavy's *Physiology of the Carbohydrates:* "The theory of Pavy, repeated in nearly every text-book, that the liver is a sugar-destroying and not a sugar-forming organ, rests on so unsubstantial a basis, and has been so completely refuted by the work of Seegen and other investigators, that it need not be considered."[1] I am still of the same opinion, and until it is supported by better evidence than he has been able to adduce, I, for one, cannot afford the time to give it further consideration, but shall continue to look upon the liver as a sugar-producing structure. In doing so I by no means exclude the possibility of the liver also producing fats, and using its glycogen in such fat production. In fact, I hope soon to adduce evidence that the liver has this action. But to demonstrate this is not to overthrow the conception that glucose, too, is a normal product of hepatic metabolism.

CARBOHYDRATES DERIVED FROM "CLEAVAGE" OF PROTEIDS.

Among the questions of secondary importance at which we are at variance is the evidence adduced by Dr Pavy of the formation of carbohydrates by cleavage of proteids.

I am glad that my objections to any definite conclusion being drawn from the occurrence of osazone crystals without analyses should have led Dr Pavy to engage a reliable chemist to prove that these compounds are really osazones of sugar.

Dr Pavy says that what I wrote in this connexion (p. 14) supports his results. He fails to appreciate the difference between "formed from" and "cleaved off from." Perhaps an illustration will help him. I should say, for instance, that paper is "formed from" rags, but I should not say it was "cleaved off" from them. The processes in the mill, far less subtle than those in living protoplasm, cause a profound alteration very different from mere cleavage.

In considering my remarks upon the support to his theory of the formation of carbohydrates from proteids afforded by the researches of Hammersten and Kossel, Dr Pavy ignores the footnote on p. 5, in which I define what I understand by proteid, which is evidently what he too understood when his book was written. I have no doubt he failed to see the significance of the note. It is unfortunate that the word "proteid" is used in two different senses,—as an equivalent for the group of albuminous bodies, and as a term for the products of the union of these with other materials, such as hæmatin, nucleic acid, etc. It was for this reason I defined the sense in which it was used by us.

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[1] For the occurrence of inverted commas in the original footnote I have expressed my regret to Dr Pavy.

If Dr Pavy simply contends for the formation of carbohydrates from the decomposition of such bodies as nucleo-proteids and mucin, every one will agree with him. But his previous contention was that from albuminous bodies, such as egg albumin, fibrin, and the proteids of blood serum (*Physiology of the Carbohydrates*, p. 31) a carbohydrate is formed by cleavage, and this contention his "German confrère," Dr Grube, has pointed out is not supported by Kossel's work, since "the carbohydrate did not come from the albuminous base (Eiweisskern), but from the associated group (prothetische Gruppe)," p. 35.

But the question still remains: Was the albumin from which osazones were prepared by Dr Pavy free of carbohydrate bodies in mere mechanical union or loose chemical connexion, or was the carbohydrate an integral part of the molecule? Schenck's results, already considered, show that mixtures of carbohydrates with albuminous substances are formed, which may account for Dr Pavy's results. But Dr Pavy refuses to consider these observations.

As I said before, I do not deny that a carbohydrate *may be* yielded by the splitting of the proteid—the albuminous—molecule; but I did say, and still maintain, that all that Dr Pavy has yet proved is that, in the solution of proteids by caustic potash or sulphuric acid, a carbohydrate substance, convertible into sugar, is set free, which was either loosely combined with the proteid or formed an integral part of its molecule. Until the work of Schenck has been satisfactorily dealt with, an open mind must be kept on the subject. Undoubtedly the fact that an increased amount of reducing substance is obtained by the use of stronger solution of potash favours his view.

EVIDENCE OF CONVERSION OF CARBOHYDRATES TO FATS IN THE INTESTINAL EPITHELIUM.

Dr Pavy says of me (p. 4), "That without adducing a particle of evidence derived from an experimental testing of my work, he instead has sat down, and simply through the medium of his pen attacked me on every side with statements drawn from the heterogeneous mass of writings extant."

How is this statement of Dr Pavy's to be reconciled with the following (p. 131), when speaking of Dr Gulland's and my experiments, undertaken to test his theory of the action of intestinal epithelium on carbohydrates? "As regards the experiments on feeding rats with starch and sugar, I too experimented with rats in 1858 (probably twenty years before Dr Paton commenced his medical studies) in relation to the same point," *et seq.*!!

Dr Pavy is certainly not quite just in his way of describing our experiments. He contended that carbohydrates are converted into fats in the intestinal epithelium. I do not think that I have misrepresented his theory in my previous article by failing to quote his words *in extenso.*

On January 21, 1895, Dr Gulland and I communicated a paper to the Royal Society of Edinburgh, "On the Absorption of Carbohydrates by the Intestinal Epithelium: an Experimental Inquiry into Pavy's theory of the Action of the Epithelium on Carbohydrates." This was published in the *Proceedings,* 1894-95, p. 347. This paper Dr Pavy heard me communicate to the Physiological Society in February last, and I sent a copy of it to him last July. It contains the records of various experiments made with the object of determining whether the fat observed and figured by him in the intestinal epithelium was really derived from carbohydrates.

One rabbit was fed on ordinary oats, another on oats deprived of fats by extraction with ether. One rabbit was fed on oats rich in fat, another on turnips poor in fat but rich in carbohydrates. In both cases, while the rabbit fed on fat-containing oats had fat in the epithelium, the other, though perfectly healthy and vigorous, had none.

With rats the following experiments were performed:—

One was fed on lean horse flesh, one on starch and sugar, one on ox fat. In the two former no fat was present in the cells, in the last there was an abundance.

Again, rats were fed on hard-boiled white of egg, starch, and water, and no fat was found in the epithelium, though the rats were healthy and vigorous.

We concluded from these experiments—

"1*st,* That the fat found in the intestinal epithelium of rabbits fed on oats is derived from the fats of the oats.

"2*nd,* That there is no evidence that carbohydrates are converted to fats by the intestinal epithelium in the course of absorption."

Dr Pavy does not give the title or reference to this paper! and I leave it to the reader to judge after this statement how far he is justified in saying (p. 132), "Dr Paton has since published some further matter on this subject, but it contains nothing that in reality touches my position," and in leaving his reader to imagine that my experiments were merely those of feeding rats on starch and sugar. The work of Voit and others has clearly shown that such diets are not "starvation diets," but are fully adequate to maintain the healthy life of animals.

It appears to me that Dr Pavy's theory of the action of the intestinal epithelium in stopping and assimilating carbohydrates with the formation of fat rests on even a less substantial basis than his theory in regard to the performance of a similar function by the liver.

It seems to me that Dr Pavy makes a cardinal mistake in regard to his position when he considers himself the party attacked. It is he who is attacking. It is he who is trying to overthrow the generally accepted views of physiologists, and I regret that no abler champion should have seen fit to take up his gauntlet and to defend the position. But I think that the consensus of opinion is with me in considering *that the glycogenic theory is unshaken by his attack.*

In this reply I have endeavoured calmly and dispassionately to indicate why Dr Pavy's methods seem to me unreliable, and to show that he has adduced no satisfactory evidence that the liver merely arrests sugar and does not form it, and that the intestinal epithelium has any power of converting carbohydrates into fats; and I have pointed out the fallacies in his method of attempting to demonstrate that carbohydrates are formed by the cleavage of the molecules of egg albumin, fibrin, and such proteid substances. He may be right in his views; but what we have to consider is whether the evidence he adduces is sufficient to prove his contention.

I have not here dealt with Dr Pavy's strictures on my work on Hepatic Glycogenesis, because I desire not to confuse the issues before us. My work deals, not with the existence of hepatic glycogenesis, but with the *mode* of sugar production. I shall reply to his criticism on this at as early a date as possible, after I have been able to carry out certain further experimental investigations.

MR HART AND THE INDIAN MEDICAL SERVICE.

By W. B. Bannerman, M.D., Surgeon-Major, Indian Medical Service; Deputy Sanitary Commissioner for Madras.

Six months ago Mr Hart delivered an address before the Section of Public Medicine, at the Annual Meeting of the British Medical Association, on Public Health Legislation and the Needs of India.

In this address he brought grave charges against the officers of the Indian Medical Service, maintaining that the highest officials of the Service were distinguished for "ignorance," that they were "full of prejudices," and "tyrannical" to their juniors, and he succeeded in persuading the meeting to carry a resolution, to the effect that the present sanitary administration of India failed "to give the most elementary protection to the public health of the inhabitants of Her Majesty's Indian Empire."

These are grave charges, and I propose to examine the grounds for this sweeping condemnation.

Last winter Mr Hart made a tour through India and Burmah; he attended the Medical Congress at Calcutta, and he delivered addresses at that place and in Madras before the local branches of the British Medical Association there. That these addresses were well received appears from the reports published in the Indian newspapers, and Mr Hart enjoyed the usual hospitality for which India has been long noted. But on the publication of the address delivered in London before the British Medical Association, these same medical officers passed the following resolution at a meeting of the South Indian Branch :—

"The members of the South Indian Branch of the British Medical Association have read with much surprise the resolution which was passed in the Section of Public Medicine at the Annual Meeting of the Association lately held in London, and founded on the address delivered by the editor of the *British Medical Journal*. They wish to point out that the whole of that address, so far as it refers to the civil portion of the Indian Medical Service, is full of inaccuracies and unjust statements, calculated to reflect discredit in a most unwarrantable manner upon a large body of the profession in India. They feel certain that had the members present at that meeting been in possession of the true facts regarding sanitary progress in India, and the work done during the past thirty years in India, in both the civil and military departments, they would not have been induced to accept all Mr Hart's statements, and to pass such an ungenerous resolution, which reflects adversely on them and on the Government they have the honour to serve. They trust that the Council will see fit to give the same publicity to this protest as they have given to the editor's erroneous and defamatory statements."

Now, why this change of front, if the addresses delivered in Madras and in London contain the same statements?

It is expressly stated in the above resolution that what is objected to is the tone of the *London* address, as tending " to reflect discredit in a most unwarrantable manner upon a large body of the profession in India."

As a reply to this, and the only one vouchsafed up to date, I believe, Mr Hart publishes the *Madras* address, which was not alluded to at all in the resolution. This, no doubt, is smart journalism, but is not very much to the point.

Let any one read the Madras address, published in the *British Medical Journal* of November 9th, 1895, and then the address to the meeting in London, published in the same journal of August 3rd, 1895, and the great difference in tone will be at once apparent.

When addressing the members of the South Indian Branch, Mr Hart appears to have found no praise too high for the members of the Indian Medical Service (who formed the bulk of his audience), such phrases as the following occurring :—" One of the most interesting and important incidents . . . of my present visit to India . . . has been the opportunity . . . of making the personal acquaintance of the distinguished men who are presiding over its activity (*i.e.*, the activity of the 'great machine' of the Indian Medical Service), and of a large number of those, such as yourselves, who are the individual factors of its successful operation." "What I have seen and learnt has filled me with an unmingled admiration of the surprising extent and variety of the work done, of the unstinted labour and enthusiasm with which this vast field of medical activities is covered." "We in England have long been accustomed to look upon the Indian Medical Service as representing individually the flower of the medical profession. They are for the most part selected out of the most able of our younger graduates. Only those who feel themselves able to go through a special examination, beyond and above those which qualify for general practice in England, present themselves for the severe test by which alone the high marks which qualify for the Indian Medical Service can be obtained. Made up of the pick of the younger members of the profession, polished and sharpened for the work from their special training and subsequent examinations at Netley, they enter this service well prepared and thoroughly equipped for their work in this great field. It is not surprising that they have attained a justly high reputation for the admirable efficiency with which they perform their difficult duties, and that they succeed in rendering services to the people of India and to the British Empire, which are in their character and extent quite unprecedented." "We in England perhaps hardly realise that . . . almost, if not quite, the whole of the enormous service rendered to the Empire by the diminution of mortality in the great cities and provinces of India is also due to the efforts of the Indian Army Medical Officers lent to the Civil Medical Department, and serving under another title."

Now, note what Mr Hart says in London regarding these same officers. "The oldest men in the service are the highest in official position. Their ignorance is often the standard by which their juniors are bound, their prejudices become a despotism, and their follies a tyranny." "The last . . . Blue-Book issued by Surgeon-General Rice . . . is a good example of the costliness, the futility, and the impotence of the present system." "Superior officers who in their ignorance scoff at modern scientific science." "The domination of really able young officers by superiors who have risen by mere seniority to positions which . . . they are quite incapable of fulfilling by reason of their age and of the antiquated state of their information, if even many of them had ever possessed at any time the qualities . . . for such posts." "The elevation to the very highest offices . . . of men who . . . are wholly unfitted to be trusted with the administration of the health and lives of the vast population."

The egotistical tone of the London address is also remarkably in contrast to that of the Madras speech, leading one to imagine that all we poor ignorant Indian officers knew on the subject of cholera being a water-borne disease had been derived from Mr Hart's teaching. The address in this matter is certainly instructive, as I for one must plead guilty to ignorance of his claims prior to reading it; yet I seem to be in good company, for though I have listened to many lectures on water-borne cholera and typhoid in the class-rooms of the University and the College of Surgeons in Edinburgh, and also at Netley, yet never did I hear Mr Hart's name mentioned as the great authority on the subject. Indeed, he himself tells us that Snow and Simon preceded him, though a little further on he says that "the theory that cholera is wholly, essentially, and universally a water-borne disease" is wholly his own.

Nevertheless, so widely diffused is the knowledge of the value of boiling water in India that any housewife will reassure her guests on this head before asking them to use the household supply. Nor is this knowledge a recent acquisition, as Mr Hart could very well have ascertained if he had taken the trouble to inquire in the right direction, instead of disinterring mouldy reports of over twenty years ago. Is Mr Hart really acting in good faith when he compares what is only "now becoming a commonplace in Europe" with the state of enlightenment in India in 1872? He acknowledges that the Londoner still drinks Thames water in 1895, yet he wonders that India is not wiser. Truly he must have a high opinion of "the remarkable ability" and "the enormous power of work" of the Indian Sanitary Officer, who, single-handed, is to accomplish among an uneducated and prejudiced race what Mr Hart himself has not succeeded in doing with all the backing of scientific men, scientific journals, and an enlightened public of his own nationality.

As disposing of the accusation of "failing to give the most elementary protection to the public health," I would call attention to what has been done in the Madras Presidency, with which I have the honour to be connected. During the last few years water-supply schemes have been carried out in the following large towns,—Adoni, Tanjore, Madura, Cuddapah, and Ootacamund; and large works are now in progress for Trichinopoly, Dindigal, and Karnul. Lord Wenlock, Governor of Madras, in addressing the assemblage present at the opening of the waterworks at Tanjore, said: "Without detaining you for more than a few moments I should like to run over briefly some of the important works which are going on at present in the Presidency of Madras, because I cannot help thinking that in this particular manner Government is enabled to do more lasting and invaluable good to the country than in other ways. I do not know if Government can confer any more lasting and invaluable benefit on the people than by giving them a pure supply of water. Naturally such schemes always entail a large expenditure of money, and it is found that some of the municipal councils are not able to afford the amount of money requisite for this purpose as easily as the large and prosperous city of Tanjore. But I hope it will be found possible eventually to enable large centres of population to have placed within their reach a large supply of pure and wholesome water. I have before me the figures which show what the Government has been able to do during the last four years in this direction. I have not been able to obtain the figures for this year; but I find that in eight municipalities the Government has spent a sum of Rs. 12,74,797 during the last four years, while at the same time on drainage schemes in three municipalities a sum of Rs. 1,68,872, or a total in four years of nearly 14½ lakhs has been spent. I believe the amount of money which will be spent this year will very closely approximate 4 lakhs more. Therefore, during the time I have been in Madras, Government will have spent very nearly 18½ or 19 lakhs of rupees in providing a pure water-supply and drainage to large centres of population. But, as I said before, this is a work which cannot be allowed to stand still, because though certain large cities now have a pure supply of water, yet there remain a great many more to be also similarly provided for; and I shall leave as a heritage to my successor various other large schemes which are now being considered by the Government, and which I hope in the course of a few years more may be as successfully accomplished as the particular one the inauguration of which we are here to-day to bring about. The following projects are likely to be undertaken during the next few years. In the first place, we hope that Bellary, which stands very much in need of water-supply, will be provided, though no estimates have been framed as yet. Water-supply schemes for Bezwada, Calicut, Guntur, Karur, Negapatam, Palamkotta, Tinnevelly, and Salem are either under preparation or investigation. Three schemes—one for Coimbatore, costing Rs. 4,00,700, one for Tuticorin, costing about Rs. 3,18,714, and one for Nellore, costing roughly about Rs. 2,00,000—are also under consideration. But they are found to be beyond the means of the councils concerned, and they are lying over pending the amendment of the District Municipalities Act, which is before the Legislative Council; and when the amended Act becomes law it will enable the councils to find larger sums of money in order to provide themselves with a much-needed water-supply. The estimate for the Conjevaram works, which are to commence this year, is Rs. 2,57,000. A scheme estimated to cost Rs. 3,70,000 has been prepared for Cuddalore, and has been referred to the Municipal Council for consideration; and the Ootacamund and Coonoor schemes of water-supply proposed by the Sanitary Board are now under consideration. A scheme for Tirupati, roughly estimated to cost Rs. 1,15,000, is under preparation; and another for Vizagapatam, estimated to cost about 4 lakhs, is also under preparation. These are the works close to our vision which I hope will be completed in the course of the next few years. We are also very anxious to bring about a proper system of drainage for the town of Cuddapah, which is unfortunately the most notoriously unhealthy town of the Presidency, and detailed estimates for it are now under preparation. A drainage scheme is under investigation for Vizianagram, which I hope will shortly be completed. I may safely say that Government has got this important question well in hand. Though I do not wish to pledge the Government in any way, I hope it will be found possible for it to lay aside every year 4 lakhs from provincial funds to meet the demands of large centres of population in course of time. We cannot do everything at once. Rome was not built in a day, nor can we hope to complete such big undertakings as these all at once. I hope that in the course of years those who are responsible for the government of this country will be able to look back with satisfaction on this work in this Presidency, and say that in this particular matter the Government has not been backward in providing the wants most essentially required by the population."

With such a programme as the above carried out in the five years of Lord Wenlock's governorship, I think we must agree with the *Madras Mail* when it says that this must be taken as "convincing evidence of the energy and spirit that animates the Sanitary Department, and of His Excellency's own keen interest in questions affecting the health and comfort of the people."

In regard to the proposal for the complete separation of the civil from the military branch of the Indian Medical Service, let us see what the Indian papers have to say on the subject. The *Madras Mail* of 30th October last, in reviewing the Report of the Surgeon-general to the Government of Madras on the administration of hospitals and dispensaries for the past year, says:—

"During the year 5874 major operations were performed, and in addition 29,469 minor operations. The definition of major operations being very exacting, it may be safely assumed that every one of these required a considerable exhibition of skill; and a perusal of the list given in the appendix shows that this is the case. The number of surgical operations performed per annum ought to be a convincing proof of the great value to the Indian army, and consequently to the Indian public which pays that army, of the employment of officers of the Indian Medical Service in times of peace in civil employ. No army in the world has a reserve of medical officers upon which it can rely as having the high-class experience in surgical practice possessed by the officers of the Indian Medical Service. To delegate these to strictly military duties would not only throw upon the taxpayer an additional burden—for a reserve must be maintained by some means or other —but would serve to reduce their capabilities of doing good. For it need hardly be said that the surgical or medical practice to be obtained amongst bodies of men picked for their physical powers, and maintained under good hygienic conditions during a time of peace, does not offer the best field for practice. Notwithstanding the unpractical and impracticable suggestions of Mr Hart, therefore, long may our Madras Ramaswamies, our Sikhs, and our Gurkhas know that the man who tramps beside them on weary *dours* is as capable of neatly severing a useless member as to aid in an emergency in pushing a charge home with the sword he dare not draw on parade."

Again, in the same article, referring to the contention of Government that indigenous drugs should be more extensively used than at present, it says:—

"The reform party that would supplant the Indian Medical Service, and which Mr Hart has truckled to, should give attention to this matter. The native medical gentlemen who have proclaimed their fitness to replace their European teachers, and to serve in the capacity of professors of medicine, should long before this have given their special attention to the matter. It is a curious commentary on their interest in such questions, that the Indigenous Drugs Section at the Indian Medical Congress was organised and kept together with the greatest difficulty by the officers of the Indian Medical Service, and that the papers forwarded were of the most meagre character. Till further investigations show more precisely their sphere of utility, it would be well if Government held its hand. It is not likely that a conscientious medical man would care to use a drug the sole merit of which is that it is reported to be used by *vydeens* successfully, and which he receives from the local bazaar in a condition which suggests its having been gathered in the preceding century, whilst they have at hand drugs whose utility has been carefully investigated and determined with precision by specialists. The interest which Government displays in this subject is, however, neither professional nor philanthropic; it is merely financial."

From the few extracts given above it will be evident that the matter of Mr Hart's attack on the Indian Medical Service has been severely criticised in India, yet in the journal conducted by Mr Hart no notice is taken of this, though several notices of a favourable tenor have found a place in it. In closing, I cannot do better than by again quoting from the *Madras Mail* of the 2nd October the concluding paragraphs of a leading article on this subject:—

"It now only remains to say a few words with regard to Mr Hart's sweeping condemnation of the Sanitary Department. Sanitary science, as understood at present, is still in its infancy, though practical sanitation has long been thoroughly understood and worked by the medical officer in India. Apart from several excellent discoveries, theory after theory is forced upon the public, and the favourite doctrine of to-day becomes the rejected falsehood of the morrow. Under such circumstances, it is perhaps permissible to look somewhat askance at sanitary dogmatism. It cannot be claimed that all of Mr Hart's opinions are unchallenged, yet he wishes to impose them on this country. Moreover, we are confronted with the difficulty as to whether all these sanitary reforms will be acceptable to the vast majority of the people of India. As it is, there is an impression in some quarters that the British Government is interfering too much, from a sanitary point of view, with the private arrangements of the natives. Be this as it may, admitted practical sanitation is excellent, but when it comes to forcing a number of new-fangled and only partially developed ideas on an intensely conservative population, we may well betray a little hesitation, and prefer to be guided by medical officers of long experience, who know the requirements of the country, than by one who at the very best only paid it a flying visit, and is notoriously inimical to the Indian Medical Service, and prepared to strike at it in every possible way. It is more than probable that the Indian Medical Service will survive Mr Hart's attacks. The Service has for the last twenty years or so been frequently threatened with extinction of some sort; it has nevertheless contrived to survive till the present moment, and, like most threatened people, will probably live long."

Part Second.

REVIEWS.

Cutaneous Medicine: A Systematic Treatise on Diseases of the Skin. By Louis A. Duhring, M.D., Professor of Diseases of the Skin in the University of Pennsylvania; Author of "A Practical Treatise on Diseases of the Skin," and "Atlas of Skin Diseases." Part I.: Anatomy of the Skin—Physiology of the Skin—General Symptomatology—General Etiology—General Pathology—General Diagnosis—General Treatment—General Prognosis. Illustrated. Philadelphia: J. B. Lippincott Company: 1895.

The success which attended Dr Duhring's previous Treatise and Atlas has encouraged him to embark on a larger venture, the production of a more encyclopædic work, with the advantage which the uniformity attaching to a single pen imparts. The section just published deals with introductory matters, but on every page one recognises the hand of a master of his craft. The great advance which has taken place, not only in the method of preparing tissues for examination, of cutting and staining them, as well as the improvements in microscopes, particularly the introduction of apochromatic and oil-immersion lenses, has added materially to our knowledge of the minute structures of the skin. Full advantage has been taken of the most modern researches, and thus an amply illustrated picture of the integument, in all its details, has been provided. One finds, of course, very many familiar statements reproduced, but with these there is a judicious and well-selected blending of newer discoveries. A complete account of the physiology of the skin succeeds the anatomy. Notice is here taken of the temperature sense, and reference made to the observations of Goldscheider, which show that the whole of the back is very sensitive to cold, and only moderately so to heat, which explains the common habit of toasting the dorsal region before the fire, while it is also an indication, on the part of Nature, to protect those parts by non-conducting materials. We do not find, under the sebaceous secretion, any allusion to the theory of Schutz that the hair acts as a syphon and draws up the fluid sebum by capillary action, thus explaining how it is that in some persons the hair, a day or two after having been washed, recovers its oily character, and why it is, under normal circumstances, kept pliant, lustrous, and soft. In like manner the pathology is brought up to date. The way in which the crucial subject of inflammation is dealt with serves as an index to the whole subject. This will be found to have been carefully considered, much weight being given to the recent views of Metchnikoff. The questions of chemotaxis and the influences of micro-organisms are clearly elucidated. Under the head of treatment many valuable practical hints are to be found. After showing that there is no real ground for dreading the "driving in an eruption," Duhring remarks that, on the other hand, no attempt should be made to "drive the eruption out," with the idea that the cutaneous manifestation is a *materies morbi* which is to be eliminated through the skin. "There are many diseases—as, for example, those belonging to the group of glandular affections—where such active remedies as the iodides will readily 'drive out,' that is, aggravate the eruption. In like manner eczema may often be aggravated or 'driven out' by the injudicious use of arsenic; this remedy in such cases over-stimulates the cutaneous nerves when rest is required. The disease in all such cases is invariably made worse by such improper modes of treatment." This portion of the work is thoroughly practical, and no method of real utility seems to have been omitted. When completed, this treatise is sure to rank high among dermatological literature.

A System of Surgery. Edited by FREDERICK TREVES, F.R.C.S. Vol. I. London: Cassell & Co.: 1895.

ALTHOUGH there is no obvious shortcoming in the number of surgical text-books, there is a general consensus of opinion that a better work on the subject still remained a desideratum; and that so far as books were concerned, the student and the practitioner were better equipped in medicine and midwifery than in surgery. The explanation must be either that surgeons do not possess the necessary literary gift, or that the subject does not lend itself so satisfactorily to descriptive writing within the limits of a text-book. That there is some truth in the latter suggestion is evidenced by the much greater teaching value which attaches to the attendance upon a lecture on surgery than may be said to be conveyed by the reading of the same in the printed form. A careful perusal of the work before us enables us to state, with some degree of assurance, that it is vastly superior to the text-books which have preceded it. From the student's point of view, its size will prove the one disadvantage. The first of the two volumes, extending to 1152 pages, has alone been published. It is the joint production of twenty-five different authors. It differs from the well-known American text-book, in that each chapter is headed by the name of the respective author, and we think that this is a wise departure, and one upon which we congratulate Mr Treves.

Dr Sims Woodhead leads off with a chapter on Surgical Bacteriology, which, although a little lengthy in proportion to the amount of information conveyed, is exceedingly well done. Perhaps the most important chapters in the whole volume are those dealing with Repair of Wounds, Inflammation, Suppuration, Ulceration, and Gangrene, by Mr Watson Cheyne. The reader cannot help being struck with the clearness, scientific accuracy, and attention to detail which contributes so materially to the excellence of these articles; they are distinctly superior to any similar teaching known to us. Mr Lockwood has written upon Erysipelas, Pyæmia, Tetanus, and Burns with a measure of success which cannot be questioned; he has spared no pains, and his frequent references to the records of cases at St Bartholemew's Hospital are to be strongly commended. We, however, doubt the wisdom of the editor in having allowed him to include under Erysipelas an exhaustive account of Cellulitis, when this had been already sufficiently considered under Suppuration. In connexion with Mr Lockwood's articles it might be also objected that while Pyæmia is honoured by a separate chapter to itself, there is no proper description of Septicæmia.

In addition to his labours as editor, Mr Treves has contributed articles on "The Influence of Constitutional Conditions upon Injuries," "Tuberculosis," "Hæmophylia," and "Hysteria"; and it may be said that while we may not be prepared to accept all the dogmatic assertions therein contained, we cannot sufficiently express our admiration of Mr Treves' abilities as a descriptive writer. In the use of the English language as applied to disease, Mr Treves possesses a power and a vigour of style which are peculiarly his own.

It seems appropriate that the chapters on Syphilis, Gonorrhœa, and Diseases of the Skin should have been entrusted to the younger Jonathan Hutchinson, who has acquitted himself with his usual skill and accuracy.

The account of Tumours and Cysts, by Mr Bland Sutton, is on the same lines as the previous writings of this distinguished author, and is a great advance upon what is provided in other surgical text-books. At the same time we may remark upon the curious fact, that all kinds of rare cysts are described, while there is no mention of the common sebaceous cyst or wen. Mr Sutton has also contributed the chapter upon Diseases of the Jaws.

Mr Pearce Gould is an able writer, and he has made the most of "Injuries and Diseases of Bloodvessels;" 170 pages, however, are perhaps more than the subject merits (in proportion to others). This diffusiveness of writing may be illustrated by the fact that no less than twelve causes of secondary hæmorrhage are detailed, while the one really important cause, viz., septic inflammation, is barely allowed to rank as "one of the twelve."

The chapter on Injuries and Diseases of the Nerves is in marked contrast to the preceding; Mr Bowlby deserves much credit for his concise and very readable article.

Mr Stanley Boyd is responsible for the chapter upon Injuries of Bone. Like that on the Bloodvessels, it is a little too exhaustive; 74 pages (of a total of 167) on fractures in general will prove too much for the majority of readers. Neither Mr Clutton nor Mr Barker has been quite successful in their respective articles on Diseases of Bone and Diseases of Joints,—the classification of the diseases adopted being mainly to blame. In joints, for example, confusion necessarily arises from the different forms of synovitis being first described and then the different joint diseases originating in the bones, instead of giving a systematic and straightforward description of the different diseases in succession, according to their pathological cause, viz., septic, syphilitic, tubercular, etc.

Chapters on Military Surgery, by Surgeon-major Andrew Duncan; on Anæsthetics, by Dr Hewitt; on Parasitic Surgical Diseases and on Rickets, by Mr Makins; on Injuries and Diseases of Lymphatics, by Mr Morgan, are all excellent and worthy of the high standard of the *System*. The volume is profusely and extremely well illustrated.

The International Encyclopædia of Surgery: A Systematic Treatise on the Theory and Practice of Surgery. By Authors of various Nations. Edited by JOHN ASHHURST, Jr., M.D., LL.D., Barton Professor of Surgery, and Professor of Clinical Surgery in the University of Pennsylvania, etc. Illustrated with Chromolithographs and Woodcuts. In Seven Volumes. Vol. VII., Supplementary Volume. London and New York: Macmillan & Co.: 1895.

THE publishers and editor of the magnificent six-volume *Encyclopædia of Surgery*, which was finished seven years ago, were wisely advised in the inception and preparation of this splendid additional volume. The work made no claim to be a mere ephemeris or collection of novelties, but rather a digest of accepted and established principles founded on well-observed facts. Still, in the seven years that have elapsed surgical science has in all its borders enlarged, and in some quarters has conquered new territory previously almost untouched. Cerebral surgery and certain sections of abdominal surgery are almost new creations within the last decade. The name *International* scarcely describes this latest volume, for all the authors, fifty-one in number, are American surgeons,—some, from their names, of other nationalities by birth, but all holding office in American hospitals. Britain, France, and Germany were fairly represented in most of the earlier volumes. This does not diminish the value, for the authors are admirably selected, and not only is American surgery quite in the van of original research, but the restless eagerness of the American mind, and the wisdom with which their younger men travel in search of knowledge, and assimilate all that is good in other schools, enables the writers of the different articles to give a fair view of what has been done in Europe as well as in America in surgical progress. A French author rarely knows what has been done in England or America; a German may know it all, but would give as much space to some unknown German authority on a new bacillus as he would to the ripest wisdom of an experienced hospital surgeon of Anglo-Saxon birth. Our space forbids analysis of the work. The paper on "Inflammation from a Bacteriological Standpoint" will be interesting historically ten years hence, but will probably be as thoroughly abolished by that time as all the other old theories which once were new have been cast into the limbo of forgotten talk. The paper on "Wound Treatment" also marks a stage in our methods which may be briefly described as elaborate precautions as to instruments, surgeon, and dressings, and great simplicity or non-interference with Nature's work in the wound. Erysipelas, septicæmia, and pyæmia are discussed in the light of recent bacteriological research, but in language so involved as to suggest the probability that the author thinks in a different language from that in which he writes. Neither in pathology do we find much novelty in the paper on "Abscess and Ulcers." The section on tumours is long and exhaustive, and is enriched by a copious bibliography. Except in gradual alterations in nomenclature and in urging early operation and complete removal no marked changes appear. Important sections on Treatment of Joint Disease, on Injuries of the Head, and Surgical Diseases of the Head, have been confided to men of large experience in their respective departments. In the section on Diseases of the Breast it is pleasant to notice that full recognition is given to the Edinburgh work done on that subject, specially to that of Stiles, who has emphasized so admirably both the necessity and the method of complete extirpation of both breast and glands. Drs Van der Veer and Wyeth each write an excellent little section on Abdominal Diseases and Hernia respectively.

The urinary and genital organs of the male, injured or diseased, have nearly one hundred new pages; those of the female are shortly described in thirty-six. Possibly this implies that the great wave of operative gynecology had reached its flood seven years ago, and has now begun to recede. A short paper on "Some new Hospitals and their special contrivances in Aseptic Operating Rooms" is the last in this splendid volume, which every surgeon should acquire who is the fortunate possessor of the six earlier volumes.

An Atlas of Fertilization and Karyokinesis of the Ovum. By EDMUND B. WILSON, Ph.D., Professor of Invertebrate Zoology in Columbia College. With the co-operation of EDWARD LEARNING, M.D., F.R.P.S., Instructor in Photography at the College of Physicians and Surgeons, Columbia College, New York. Published for the Columbia University Press by Macmillan & Co.: 1895.

THE University Press of Columbia College is to be congratulated on the appearance of this beautiful Atlas, which will be of the greatest value to teachers of biology, anatomy, physiology, and obstetrics, for in all these courses of instruction does the question of the early stages of development demand attention. The scheme of the work is good. A short and clear statement of the main facts of maturation and fertilization of the ovum, illustrated by admirable diagrams, is given, and then a series of photographs of the ovum in its different stages is presented. It is impossible to exaggerate the beauty of these photographs or to sufficiently admire the wonderfully clear manner in which they demonstrate each subtle change in the essential elements of fertilization. The price of the book may put it outside the range of the ordinary student, but to the teacher it will be almost essential.

The Medical Digest, or Busy Practitioner's Vade-Mecum. Appendix, including the years 1891-2-3-4 and to August 1895. By RICHARD NEALE, M.D. Lond. London: Ledger, Smith, & Co.: 1895.

DR RICHARD NEALE deserves well of his profession on account of the enormous labour and pains he has, during this last five-and-forty years, expended in forming this admirable index to the periodical literature of the day. To the busy practitioner more specially his work is invaluable, as it saves him any trouble in hunting up references and in verifying quotations. The first edition was issued to the New Sydenham Society in 1877, and the third edition to the general public in 1891. This new volume is a sequel to that last edition, and to the possessors of it brings their knowledge of contemporary medical literature up to date. If every practitioner possessed and consulted these most useful and cheap volumes, the profession would be spared the infliction of having to read papers on new discoveries falsely so called. It also affords an immediate method of discovering the newest form of treatment recommended in the periodical press. Whether this is an unmixed benefit or not remains to be seen; but as the names of the authors are given, it is easy to avoid those that at a glance will be seen to be suggested on quite insufficient grounds. As an example of extraordinary industry in a very dull pursuit, Dr Neale's venture deserves gratitude and encouragement.

Methodical Examination of the Eye. By WILLIAM LANG, F.R.C.S. London: Longmans, Green, & Co.: 1895.

IN less than a hundred pages Mr Lang is able to give a very clear account of how the methodical examination of the eye should be carried out. The little book, which purports to be Part I. of a "Guide to the Practice of Ophthalmology for Students and Practitioners," fills an empty space in literature, and will be found of decided value for those for whom it is intended. The examination of the eye is divided into three stages: the first deals with the external and anterior parts of the eye; the second with vision and refraction, including balance of muscles; the third with the ophthalmoscope. The directions to be followed are very plainly stated, suggesting, indeed, a cookery-book in its abrupt announcements of the "Requisites" for the various tests, and there are very few mistakes. On certain points we may hold a different opinion from that so tersely expressed by Mr Lang, but since, in a book addressed to such an audience, it is necessary to be dogmatic, we let that pass. In regard to a considerable number of the tests—as, for example, the field of vision, base line, and power of convergence—the author would have done well to have mentioned what is the normal standard; if that is not told him, the student may not be much wiser, after conducting the manœuvre, than he was before. The numerous illustrations showing the mode of applying various tests are decidedly superior to the average.

The Physiology of the Carbohydrates: An Epicriticism. By F. W. PAVY, M.D., LL.D., F.R.S., F.R.C.P., Consulting Physician to Guy's Hospital, etc. London: J. & A. Churchill: 1895.

A WORD of explanation concerning the origin of this "Epicriticism" might be of service before we consider the book itself. Dr Pavy, as every one knows, has for long devoted himself to the study of diabetes mellitus. He has, for some years back, disputed the correctness of the glycogenic theory as enunciated by Bernard, although up to last year he could never bring forward any satisfactory proofs in favour of an alternative theory to explain the fate of the carbohydrates on the food in the body. Dr Noël Paton in

1893 presented a paper to the Royal Society on "Hepatic Glycogenesis," which was published by the Society in 1894, before a new book by Pavy, advancing evidence against glycogenesis, as the term is generally understood, and in favour of a different hypothesis, appeared. Dr Paton in his paper had dismissed Pavy's theory that the liver was a sugar-destroying, not a sugar-forming organ, as insufficiently supported by any trustworthy evidence, and, therefore, at that time not of sufficient value to merit detailed criticism. On the appearance of Dr Pavy's book, a short time afterwards, Dr Paton wrote a short paper, which was published in these columns, devoted to a destructive criticism of the theory there set forth and of the methods employed. There the matter rested until the appearance of this "Epicriticism." Although Dr Paton's remarks, both in his original paper and in the supplementary note, were short and trenchant, still he discussed the subject impersonally. Dr Pavy, on the other hand, in his "Epicriticism" has adopted a most regrettable tone: he acts practically the bully. Because he has the weight of years on his side, he sneers at the arrogance of youth, forgetful of the exhibition he at the same time is making of the touchiness of old age. On the other hand, we are sorry that Dr Paton took up such an irreconcilable position with regard to Pavy's work and conclusions. The application of the osazone reactions in this direction was entirely new, and merited more consideration than he gave them. That his criticism showed some weak points in Dr Pavy's chain of reasoning is proved by the pains taken in the "Epicriticism" to strengthen them and to supply some very requisite parts which were previously wanting.

In addition to the bad taste displayed in the text, Dr Pavy has introduced into the preface, quite gratuitously, a private quarrel of his own with the officers of the Royal Society for publishing Dr Paton's paper in the *Philosophical Transactions*, a thing with which Dr Paton had nothing to do.

The subject-matter of the "Epicriticism," when considered apart from personalities, is of much intrinsic value, and, it must be confessed, contains much that serves to put the author's theory, which is really a most ingenious one, on a firmer foundation than his previous volume. A link of much importance has been added by the ultimate analysis of the osazone bodies which has been undertaken by A. R. Ling, F.C.S. The result of analysis proves conclusively that the bodies obtained from albumin by the action of caustic potash and sulphuric acid are sugars, and that they form osazones on treatment with phenyl-hydrazin.

Dr Pavy's theory in its entirety may be said to hinge on the possibility of the carbohydrate molecules being incorporated in proteid molecules through protoplasmic action, and again liberated from the proteid molecules by the action of a ferment when required in the body. He has established that sugar can be obtained in various ways from proteid bodies, but the evidence that they form an integral part of the proteid molecule must be regarded as still insufficient.

There is no doubt that the publication of these works by Dr Pavy will stimulate workers to verify his results, and in the end be productive of good, but we hope that the style of controversy adopted in this "Epicriticism" will never become the vogue among physiologists or physicians.

Teratologia: A Quarterly Journal of Ante-natal Pathology. Edited by J. W. BALLANTYNE, M.D., F.R.C.P.E. Edinburgh: Williams & Norgate: December 1895.

"ONE more unfortunate, gone like the rest," to parody Hood. We are very sorry. We welcomed the little stranger on its first appearance, and wished it a long and useful life. Now we regret to find that this is positively its last appearance on the stage. It has died of inanition, want of support,—that fatal want which sounds the death-knell of so many young and promising lives in these hard times. We repeat we are sorry that this little journal, which filled a niche otherwise unoccupied, and which deserved to live from the able way in which it was conducted, should have come to a premature end. The present, and last, number contains a useful analytical index of the subjects treated in the former numbers, as well as a list of the authors who have written on matters teratological, and of the periodicals from which abstracts have been made. And here an end. Vale—Vale—Vale.

The Practitioner: A Journal of Practical Medicine. January to June 1895. Edited by MALCOLM MORRIS. London: Cassell & Company, Limited.

UNDER the new *régime* the numbers of the *Practitioner* for the last six months have been issued in a very neatly bound volume. Several of the numbers have been noticed before in our columns. Many of the papers are of great interest. We wish the energetic editor the success he deserves.

Part Third.

MEETINGS OF SOCIETIES.

MEDICO-CHIRURGICAL SOCIETY OF EDINBURGH.

SESSION LXXV.—MEETING III.

Wednesday, December 18, 1895.—Dr WILLIAM CRAIG, *Vice-President, in the Chair.*

I. EXHIBITION OF PATIENTS.

1. *Dr Allan Jamieson* showed a case of XERODERMA PIGMENTOSUM IN AN EARLY STAGE. Janet W., 3¼ years old, was brought to the

Royal Infirmary on 16th November 1895. She lived in the outskirts of Edinburgh, and was an only child. Her mother's father died of cancer of the tongue at the age of 69, but he had been a very heavy smoker. Several near relatives on both sides have died of consumption. She was born at seven months, yet she throve well till she was a year old. Vinolia soap was used to wash the child. When twelve months old her mother noticed a roughness of the face, such as might be caused by cold. The skin was itchy, for the infant scratched it. This roughness gradually became worse, though always confined to the face. The surface never oozed or became wet; was always dry and scaly. There were then no freckles. These appeared nine months later, and could not be accounted for by any undue exposure to the sun's rays. Since then they have increased in number. The child is well enough grown for her age, is nervous, fretful, and capricious. On admission it was seen that only the skin of the face was affected; there were no freckles or any abnormal changes on the neck or hands. The skin of the face was pigmented as well as being much freckled. It was dry, rough, and very slightly scaly. Here and there were stigmata or telangiectases, small pinkish spots, and atrophic white ones. There was a prominent wart the size of a pea at the outer canthus of the right eye, and in the centre of the left cheek there was a pea-sized scab, firmly seated, brown in colour, and surrounded by a raised edge, something like the rolled edge of epithelioma or rodent ulcer. The lips were dry and compressed. The conjunctivæ were slightly congested, the margin of the eyelids tending to ectropion. She was admitted into Ward 38 on 10th December. The wart on the left cheek had then fallen off, leaving a pink macular but superficial scar. Another had come in the centre of the right cheek, a hard warty growth with a narrow red areola. The urine was examined and found to deposit some urates, but contained neither sugar nor albumen. The treatment ordered was to have one quarter tabloid of thyroid extract daily, a small dose of cod-liver oil at night, and an ointment of boric acid in lanoline cold cream applied to the face. This seems to be but the second case reported in Scotland. Prof. M'Call Anderson had one in a boy whose sister was also affected, though she died from an intercurrent complaint. One has also occurred in Ireland, figured and described by Dr Byrom Bramwell. There have been five in England, described by Drs Radcliffe Crocker, Pringle, and Stephen Mackenzie. In all between sixty and seventy examples have been recorded from various parts since it was first brought under notice by Kaposi.

2. *Mr MacGillivray* showed—(*a.*) A case of EXCISION OF THE CONDYLES OF THE HUMERUS FROM DISLOCATION WITH FRACTURE; (*b.*) A case of THYROTOMY FOR PAPILLOMATA.

3. *Mr Cotterill* showed—(*a.*) PANCREATIC CYST. Sarah B., aged 15, had suffered twelve weeks previous to her admission to Mr

Cotterill's Wards from a sharp attack of gastric pain, accompanied by constipation and vomiting. A swelling began to show a fortnight after this, and at the date of her admission to the Wards there was a large tumour the size of a child's head in the left hypochondriac and umbilical regions, passing across the middle line to the right hypochondrium. This caused the patient a lot of dragging pain, and she was much emaciated. The exact nature of the tumour being doubtful, some of its contents were drawn off by the aspirator and examined, when the fluid was found to present several of the characters which were indicative of cyst of the pancreas. The chief interest in the case lay in the fact that the cyst was opened by a posterior incision, and not through the anterior abdominal wall, as is usually done. It was considered an advantage to attack the cyst from behind, as there it could be reached extra-peritoneally, it would drain better from a posterior opening, and there would be less risk of the subsequent formation of a ventral hernia. An incision was accordingly made along the outer border of the erector spinæ, just below the twelfth rib, and a tube was inserted into the cyst, the wall of which was found to be thick and nodulated on its external surface. The wound was kept open by drainage-tube for some four months, and latterly iodine was injected occasionally, to help to cause obliterative adhesions in the interior of the cyst. It was then allowed to heal, and has remained cured since that time. During her stay in the ward she was given liquor pancreaticus with her food, and this seems to have supplied a want, as she put on nearly 3 stones in weight in six months, and is now fat and well. The posterior incision was suggested to Mr Cotterill by a case of Mr Cathcart's, where he had found it necessary to make a counter-opening behind in a somewhat similar case, and had found that the wound drained well from the flank. The case shown is believed to be the first, in this school at any rate, which has been deliberately attacked from behind, and there seems little doubt but that it is the safer method.

(*b*.) LATERAL SPINA BIFIDA. Alexander A., aged 9, was sent in to Mr Cotterill's Wards on account of paralytic talipes equinus. On closer examination he was found to be suffering from a spina bifida, which protruded laterally through the sacrum through an opening opposite the right sacro-iliac synchondrosis. The tumour was about the size of an orange, and was covered by normal skin. It disappeared on pressure, and did not vary in size on coughing, but grew very tense when the patient stood upright. On passing the finger into the lower bowel it was found possible to invaginate the rectum through this bony aperture in the sacrum on to the posterior surface of that bone. Some fluid withdrawn from the tumour possessed the characteristics of cerebro-spinal fluid. The boy was found to be suffering from the following abnormalities in conjunction with the spina bifida:—Imperfectly developed ears, especially the left, a very arched palate, ptosis of left eye, paralytic equino-varus of right side, congenital hydrocele, right inguinal hernia (congenital), an abnormally wide range of movement at the right shoulder joint, incontinence of fæces and urine, non-descent of the left testicle, and a somewhat backward mental development.

(*c.*) ACTINOMYCOSIS. Catherine F., aged 27, a domestic servant, was sent into Mr Cotterill's Wards suffering from a large swelling over the right zygoma and malar bone, of three weeks' standing. The symptoms had begun four weeks before admission by severe pain in the right ear, followed in a few days by swelling in front of the ear. There was no history of otorrhœa. Fomentations were applied for a few days, but as the swelling increased rapidly, an incision was made into it, and a few drops of pus evacuated, together with a considerable quantity of greyish pultaceous material, strongly suggestive of a rapidly growing sarcoma. It was discovered, however, to be a case of actinomycosis, the microscope detecting the ray fungus. The swelling was scraped with a Volkmann's spoon, and drained for two weeks, and iodide of potash was given in large doses. The patient is now convalescent (six weeks from the operation), the swelling having entirely disappeared, and the general health being greatly improved. Some decayed stumps were extracted, but no fungus was found about them.

In the above cases Dr Leith, pathologist to the Infirmary, kindly examined the specimens microscopically.

4. *Mr Caird* showed—(*a.*) A male patient, æt. 26, on whom he had performed a double (simultaneous) operation for PYLORIC STENOSIS AND DILATION OF THE STOMACH. The strictured pylorus was incised longitudinally and sutured transversely (method of Heineke and Mickulicz). The stomach was doubled upon itself, its greater curvature united to the lesser curvature, and the opposed serous surfaces to each other (method of Birchner). At the time of the operation, June 1895, he weighed 6 st. 12 lbs.; he now weighs 8 st. 7 lbs.

(*b.*) A lad, æt. 14, with a markedly tubercular history. He was admitted to the Royal Infirmary suffering from MIDDLE-EAR DISEASE, for which Prof. Chiene opened the left mastoid antrum. Three days thereafter he complained of severe headache, his temperature rose, and rapidly there came on incoherent speech, right side facial paralysis, twitching of right arm and leg, then twitching of all the limbs, succeeded by diminished motion, diminished resistance, and delayed sensation in the *right* limbs only. There was left optic neuritis. Temperature 104°. Under the belief that there was suppuration extending upwards from the Broca's convolution along the Rolandic areas, Mr Caird trephined. On opening the tense dura a quantity of serous fluid escaped; the brain bulged. There was no pus found on the surface of the brain, nor yet within it on exploration. The pia was œdematous and showed a few milky patches along the vessels. On the following day the facial paralysis had passed off; the right limbs twitched more than the left; he was found to have right optic neuritis. Symptoms suggesting TUBERCULAR MENINGITIS now developed. He began to cry out, buried his head in the bed-clothes, his abdomen was markedly retracted, and tâche cerebrale was well marked. He became unconscious, and continued in an anxious condition for twelve days, when he began to improve. Optic neuritis attacked the right eye after the left had been affected, and the right was the last to resolve.

(*c.*) Patient, æt. 17, who, when 4 years of age, after an attack of measles, sustained an injury to the left humerus, which was followed by suppuration and exfoliation of the greater part of the diaphysis. A false joint ensued, and the stunted arm remained practically useless. After a couple of failures, the bones were successfully wired last year. Fragments of bone from the rawed extremities were left in the wound, and the process of consolidation was probably assisted by the employment of passive congestion a month after the operation. The arm is now strong and useful, but the whole of that extremity is much smaller than its well-developed neighbour.

5. *Dr John Thomson* showed, for *Dr Wm. Paterson*, a boy of 6½ years (M. H.), suffering from DEFORMITY OF THE HANDS AND FINGERS due to an attack of peripheral neuritis following measles. He had a severe attack of measles with pulmonary complications during the latter half of March. This pulled him down very much, but he seemed to have recovered pretty well. About the beginning of June he began to complain of tiredness and pains in his feet. Although the pains were never severe, his ankles gradually became extended so that he could not put his heels to the ground. His knee-jerks were gone. No rise of temperature. On 1st July, Dr Paterson found for the first time that there was distinct analgesia of the feet and legs. This passed off, and on the evening of the same day there was hyperæsthesia. There was also marked frequency of micturition. In the end of July, the feet were still so pointed that he could not stand, but there was no pain or tenderness. Early in September he was able to walk, and now his legs and feet seem quite right. On June 30th (a month after the feet) both his hands became sore in one day—with half an hour's interval. The pain was very severe, so that he screamed with it day and night for some days. It gradually subsided, but was still present in some degree four weeks later, and the hands remained very sensitive, apparently from hyperæsthesia of the skin as well as of the joint structures. The wrists became fixed in a flexed position; the fingers and thumb of the left hand were flexed towards the palm, the fingers of the right being extended at the metacarpo-phalangeal joints and flexed at the others. (Photograph shown.) Attempts at extension were very painful. The position of the hands is slowly improving; they are very much less tender, and the range of movement of the joints is steadily

increasing under regular passive exercises. The power of voluntary movement also is slowly returning to the fingers and hands. The prognosis seems quite good as to ultimate complete recovery.

6. *Dr John Thomson* showed a girl (Jessie A.), æt. 14, suffering from ELEPHANTIASIS AFFECTING THE NECK, SCALP, EAR, AND LOWER PART OF FACE. She was quite well until she was 3 years old, when her left cheek was noticed, during an attack of whooping-cough and inflammation of the lungs, to be swollen. No history of erysipelas can be obtained. The swelling has gradually increased in degree and extent. The left ear was not affected until some time after the neck. During the last three years the condition has spread considerably. (Photographs shown.) She is a tolerably well-grown girl, and presents no other abnormality. The lower part of the face—nose, lips, cheek—has its tissue distinctly thickened. The left auricle is much hypertrophied, and is fully ⅔ in. lower than the right one, owing to the swelling of the adjoining scalp and cheek. The left side of the neck is much swollen, the right side only slightly; on both there are a few hard, deeply-situated, enlarged glands. The mucous membranes of the mouth and throat are unaffected. Those of the nose and conjunctivæ are very prone to catarrh. There is a sore on the right cheek which shows little tendency to heal. The condition is precisely that which occurs sometimes after erysipelas. It is comparatively common in the extremities, but rare, I believe, in this situation.

7. *Mr David Wallace* brought before the Society a patient upon whom he had operated for CEREBRAL ABSCESS. Jessie A., æt. 19 years, was admitted, on 15th July 1895, into the Royal Infirmary, under the care of Mr Caird, in the absence of Prof. Chiene. For seven months she had suffered from middle-ear suppuration, but twelve days before admission the discharge from the left ear became more profuse, offensive, and of a green colour. On the evening of 14th July, when she returned from her work, she felt very tired, was sick, and could eat no supper. At times during the next day she was delirious, and her medical attendant advised that she should be sent to hospital. On admission she was restless and delirious; resisted examination of the ear, and did not recognise people. Pulse 56 to 64 per minute, weak and intermittent. Mr Caird, on examination, found a quantity of greenish putrid pus in the left ear—the membrana tympani was destroyed. There was fulness behind the ear, and pain on percussion over the mastoid. Temperature 101°·2. She complained of pain in the head, but did not localise it. Mr Caird opened into the mastoid antrum of the left side, and from it a quantity of foul pus escaped. A free communication between the middle ear and antrum was formed. Next morning the temperature was 98°, but in the evening it rose to 100°·4; pulse 62, and respirations 28. After this the temperature gradually fell to below normal; the pulse became slower, falling on 19th July to 47; respirations, 28. In the evening the

patient was observed to be drowsy, but answered questions; she was, however, more irritable than formerly. *20th July*, 8 A.M.—Mr Wallace was asked to see patient, as Mr Caird was absent from town. She was found quite comatose; temperature, 97°; pulse, 44; respirations, 26. No symptoms had been observed which pointed to the cause of the condition, and in the first instance, therefore, Mr Wallace opened up the mastoid antrum more freely, but found no accumulation of pus. There was a sequestrum at the upper part, which, when removed, exposed the dura, which seemed healthy. It did not pulsate, and did not bulge into the opening. A large flap of the scalp was now turned back, and a circle of bone removed an inch above and an inch behind the auditory meatus. On exposure of the dura mater there was no pulsation, but after incising it the brain bulged into the opening. No pulsation was, however, present. An ordinary grooved director was now passed through the brain tissue in a downward and inward direction, when resistance was felt about ¾ of an inch from the surface; with firmer pressure the cause of resistance gave way, and a quantity of extremely fœtid sero-pus escaped. With sinus forceps the opening was widened, and thick green pus was evacuated, followed by sloughs of brain tissue—in all about 4 ozs. Mr Wallace introduced a finger into the cavity, and found that the greater part of the temporo-sphenoidal lobe was destroyed or pushed aside. A large tube was introduced, and the cavity gently syringed at low tension, after which the tube was fixed in position, and the opening in the mastoid packed with iodoform gauze. In the evening: temperature, 99°·2; pulse, 68; respirations, 28. *23rd July.*—Tube removed; discharge very slight. Cavity practically *nil.* Piece of iodoform gauze introduced. *28th July.*—Slight increase in discharge; a small tube introduced. *31st.*—Tube removed and gauze inserted. During these ten days the patient gradually became sensible and able to answer and ask questions. Power in the left side was almost complete, but there was still marked loss of power in the right side. The eyes, examined ophthalmoscopically by Dr George Mackay, showed marked optic neuritis. *15th Aug.*—Much better, but a little hysterical. *20th Aug.*—Able to move about the ward. *24th.*—Discharged, almost well. Still marked optic neuritis. There is slight amnesic aphasia, and slight want of power in the right leg. Mr Wallace said it was of great interest to note that in this case, *first*, marked optic neuritis was completely recovered from. Dr Mackay examined the eyes on 30th October, and found "the optic neuritis has passed off, leaving but little trace of past existence." *Second*, That notwithstanding the large size of the abscess the patient had made an almost complete recovery. There was no paralysis and no headache. The only remaining symptom was a very slight degree of amnesic aphasia, which was gradually passing off. Indeed, now it was only when flurried that she experienced any difficulty in naming articles.

8. *Mr H. J. Stiles* showed—(*a.*) A child, aged 6 months, with an ARREST OF DEVELOPMENT OF BOTH EARS. The auricles, which were normal in position, consisted merely of a small unconvoluted reduplication of skin, apparently with no cartilage between. On the left side there were, in addition, two small pedunculated pear-shaped outgrowths, situated immediately in front of the rudimentary auricle. (In two instances within the last year or two Mr Stiles had removed a similar pedunculated excrescence from the same situation in front of a normal auricle.) There was no trace of an external auditory meatus on either side. The right half of the face was smaller than the left; the disproportion was greater as regards the lower jaw, the right half being much the smaller, so that the chin appeared twisted towards the right side. There was distinct paresis of the right frontalis muscle, and to a less extent of the right orbicularis palpebrarum. The right cornea had become opaque,—due, no doubt, to inability to completely close the eye. There was no paresis of the muscles of the lower half of the face. The mother had repeatedly observed that even very loud noises made no impression whatever upon the child. In other respects the child appeared to be in fairly good health, and evinced a fair amount of intelligence for his age. Mr Stiles referred to the futility of attempting anything in the way of operation, as it is well known that in such cases the deeper parts of the ear are also involved in the arrest of development. Through the kindness of Sir William Turner, he was able to show the Society an interesting specimen which had been presented to the University Anatomical Museum by the late Prof. Allen Thomson, and described by him in the *Monthly Journal of Medical Science*, vol. vii., 1846-47. In it the external auditory canal did not exist, in consequence of the tympanic plate being flattened up against the squamoso-zygomatic element of the bone. He also showed two specimens from a four-months' fœtus which he himself had presented to the Anatomical Museum, illustrating the development of the malleus and of the lower jaw from Meckel's cartilage. Such specimens served to show how it was that the lower jaw was not infrequently involved when the ears are imperfectly developed. The paresis of the upper facial muscles was to be accounted for by an imperfect or compressed condition of the facial nerve which had to traverse the imperfectly developed temporal bone.

(*b.*) A female child, aged 18 months, with a WELL-MARKED CERVICAL RIB on the left side. The mother did not discover the deformity until the child was some months old; on doing so she became alarmed, and took her to Dr James Murray, who kindly sent the case to the out-patient department of the Children's Hospital. The most striking feature on inspection is the high shoulder, with a corresponding shortening of the neck on the affected side, especially when viewed from behind. (It was from this aspect that the mother first noticed the deformity.)

In front a prominence is seen above the middle of the clavicle. On palpation, a curved bony swelling is felt arching forwards above the clavicle as far as the outer border of the sterno-mastoid, where it appears to end in a free extremity. Posteriorly the bony swelling can be traced back to the spine. It has no connexion with the scapula. The pulsation of the subclavian artery cannot be felt; thus we may conclude that the vessel is lying anterior to the extremity of the cervical rib, and is not arching over it. Cervical ribs, although not infrequently met with in the dissecting-room, are seldom seen clinically, and it very rarely happens that the doctor is directly consulted on their account. He may, however, be consulted merely on account of the deformity, in which case the patient will most likely be an infant or young child. It is important, therefore, that the possibility of such a congenital abnormality be kept in mind, and the deformity to which it gives rise be recognised. In all, some eight or ten cases have been recorded (five during the present year—see paper by De Quervain, *Centralb. f. Chir.*, 1895, No. 47) in which the cervical rib has been excised in consequence of pressure upon the brachial plexus or the subclavian artery, or upon both. A case of cervical rib in an adult male patient was exhibited to this Society in December 1892 by Mr Wallace, who discovered the condition accidentally while examining the patient's chest at the Royal Public Dispensary.

(*c*.) A child, aged 5 years, with MULTIPLE AND SYMMETRICAL TUBERCULAR LESIONS, viz., in both elbows, in both supra-condyloid glands, and in the floor of both orbits, the latter situation being the seat of election for tubercle to attack the bones of the face. The early stage of abscess formation connected with tubercle of the floor of the orbit may readily be mistaken for a cyst. Its non-congenital origin and situation (over the outer part of the *lower* orbital margin) distinguish it, however, from an orbital dermoid cyst. The multiple and symmetrical character of the lesion in such cases is due, no doubt, to the entrance into the circulation of a quantity of tubercular débris, rich in bacilli, from some primary focus, the bacilli being suddenly showered down upon various parts, and taking root in those which are, or have been, rendered anatomically favourable to their further development. The same tendency to symmetrical location is not infrequently observed also in multiple acute abscesses.

9. *Mr Alexis Thomson* showed two patients upon whom he had operated for TRIGEMINAL NEURALGIA:—The first, a man of 74, had suffered for six years from attacks of epileptiform neuralgia, involving the left supra-orbital nerve in its terminal distribution on the forehead. The attacks were set up by opening the jaws. On the 30th April 1895, under cocain, 3½ cms. of the supra-orbital nerve were removed. The pain then shifted to a higher area on the forehead, in line with the point where the auriculo-temporal nerve

crosses the zygoma. On the 12th May 1895, 2·5 cms. of the nerve were removed, also under cocain. Since then the pain has quite disappeared, and he cannot elicit it any more, however widely he opens the jaws. The scars are only recognised on close inspection. The second, a man of 55, had suffered for three years from very severe epileptiform neuralgia, involving the right half of the lower jaw and side of the tongue, and shooting upwards in front of the ear. Only temporary relief was obtained from large doses of morphine injected with the needle. It was decided to attack the main trunk of the inferior maxillary division of the fifth at the foramen ovale. This was carried out on the 10th July 1895 by the method associated with the names of Lücke and Sonnenburg, the zygoma being turned down with the masseter, the coronoid process reflected upwards with the temporal, the internal maxillary artery and its meningeal branch ligatured, and the external pterygoid muscle detached from the base of the skull until the trunk of the nerve was exposed at the foramen ovale. It was then divided, and its various branches followed for an inch or more and then divided one after another. The zygoma was replaced and sutured. Since then he has been absolutely free from pain. The scar on the face is barely visible. Although the lower jaw is stiff, he can chew meat unless it is tough. There is anæsthesia in the distribution of the nerves removed, and food may lodge between the cheek and the gum without his knowledge. He cannot shut the right eye by itself; otherwise there is no facial paralysis.

10. *Dr Norman Walker* showed—(*a.*) Four cases of LICHEN PLANUS. (*b.*) A case of LEUCODERMA. (*c.*) A case of ULCERATION OF THE TONGUE along with tubercular lesions on the skin.

II. Exhibition of Specimens.

1. *Dr Burn Murdoch* showed—(*a.*) PATHOLOGICAL SPECIMEN from case of intestinal obstruction from impaction of a piece of raw rhubarb at a constriction in the small intestine. The constriction was caused by a puckering in of the gut, produced by a contraction of the mesentery, initiated by a few old-standing enlarged mesenteric glands. When first seen (twelve hours after the onset of the illness) the child was moribund. The symptoms were acute vomiting and purging. An interesting point in the history of the case was that the child, though otherwise quite healthy, had at times had attacks of colic, pointing to the passage of some article of food through the constriction.

(*b.*) PATHOLOGICAL SPECIMEN showing disease of the atlo-axoid articulation. The axis was eroded all round its pivot, and the atlas was diseased all over. At one side its substance was entirely gone, which accounted for the sudden death of the child, a dislocation having practically taken place, producing pressure on the spinal cord.

2. *Dr Allan Jamieson* showed the PARASITES OF RINGWORM, STAINED AND UNSTAINED:—(1.) Specimen of Sabouraud's trichophyton megalosporon as affecting the hair of a child's scalp, the spores within the root-sheath and inside the hair, the fibres of which were separated, and the texture broken up; unstained. (2.) The same form of fungus in a hair from tinea barbæ, the spores abundant in the root-sheath, the mycelium within the hair. (3.) The trichophyton megalosporon ectothrix from tinea barbæ, the mycelial threads ramifying round the outside of the hair; no visible spores, nor invasion of the hair. (4.) The same fungus stained according to the method described by Mr Malcolm Morris in the *Practitioner* of August 1895. (5.) Hair from ringworm of the head in a child affected with the trichophyton microsporon, the common form of ringworm fungus in this country and in France, but apparently not in Italy, where the megalosporon in one of its varieties seems more prevalent; unstained. (6.) Same fungus stained by Mr Morris's method, showing how the spores form an involucral sheath round the hair, while the mycelium which does not stain ramifies within the hair. (7.) Microsporon furfur; stained.

3. *Mr MacGillivray* showed—(*a.*) CONDYLES OF THE HUMERUS EXCISED. (*b.*) WARTS REMOVED FROM THE LARYNX. (*c.*) CALCULUS (OXALATES) REMOVED FROM THE URETHRA.

4. *Dr Graham Brown* showed, for *Dr Mackenzie Johnston*, a SMALL METAL SHOE-BUTTON which had formed the nucleus of a rhinolith recently removed by him from a young gentleman 18 years of age. The rhinolith latterly caused bleeding and bad smell from the nose, and was about the size of a small grape. It seems probable that the button which caused this condition must have been about fifteen years in the nose.

5. *Mr David Wallace* showed—(*a.*) EPITHELIOMA OF LARYNX from case of laryngectomy. (*b.*) MALIGNANT DOUBLE STRICTURE OF ŒSOPHAGUS.

6. *Dr Leith* showed—(*a.*) SPECIMEN ILLUSTRATING COINCIDENT SIMPLE PERFORATING ULCER OF THE STOMACH AND PRIMARY COLLOID CANCER OF THE CÆCUM, WITH GREAT SECONDARY INFILTRATION OF THE DIAPHRAGM AND OMENTUM. Patient was a male, æt. 47, who first came under observation for a swelling of the abdomen. This was diagnosed to be malignant disease of the omentum, but the symptoms and signs were not definite enough to indicate whether any other organ was primarily affected. The post-mortem showed the cæcum to have been the primary seat of the disease. It was affected throughout its entire extent, its wall being much thickened and of a peculiar gelatinous or glue-like consistence and appearance, especially in its inner wall. No trace of the vermiform appendix could be obtained, the wall of the cæcum being considerably over 1 inch thick around its usual seat of origin. This

may have been the point of origin of the disease. The lower lip of the intro-cæcal valve was markedly affected, whilst the upper lip was free. The disease has mapped out the cæcum with great distinctness, as there is a sharp line of demarcation between it and the ascending colon. A perforation existed in the wall of the cæcum near the usual seat of the appendix, and had set up a septic peritonitis. There were over 2 pints of thick pus in the lower part of the abdomen and pelvis, roofed by the greatly thickened lower omental border and floored by the adherent pelvic thickness. The peritoneal reflection of the ascending colon was greatly thickened, especially on the inner side, where it was over 1 inch thick, and extended upwards as far as the band of the duodenum. The omentum formed a huge mass, greatly increased in thickness throughout its entire extent. It was about ½ an inch thick at its extreme right border, and over 3 inches thick at its left and at its attachment to the colon. It completely filled the abdominal cavity, except at its lower part, pressing the abdominal coils backwards. At the hepatic and splenic flexures it was continuous with the parietal peritoneum as it passed upwards beneath the diaphragm. This part of the parietal peritoneum was over 1 to 1½ inch thick, and was adherent to the capsules of the liver and spleen. The other part of the parietal peritoneum was thickened. The peritoneum of the gastro-hepatic omentum was greatly affected, and formed a large mass, bigger than the closed fist. It had grown all round the lesser curvature and part of the anterior and posterior walls of the stomach, and at first gave the impression that it was really a tumour of the stomach. The mucous membrane was found, however, to be intact, and spread smoothly over the underlying tumour, except at one part, where there was a simple perforating ulcer upon the posterior wall about 4 inches above the pylorus. It was about 1½ inch long and ¾ inch broad, and its floor was formed by the smooth seat of capsule of the cancerous growth. It communicated with a suppurating sinus which passed for some distance into the cancerous omentum, and was also seemingly continuous with a small subphrenic abscess above the spleen. There was marked cancerous infiltration between the bladder and rectum. All the other organs were free from it. Microscope No. 1 shows the structure of the growth in the omentum. It is a typical colloid cancer of an advanced character.

(*b*.) TWO CASES OF MALIGNANT DISEASE OF THE TERMINATION OF THE COMMON BILE-DUCT. The first was in a male patient, aged 52, and the second also in a male some ten years older. In both there was persistent jaundice, but no tumour could be felt. In the second there was a definite history of gall-stones, but Mr Cotterill, after an exploratory incision, found nothing but a little thickening around or in the terminal part of the bile-duct. In both the lesion is closely similar, the wall of the duct in its last ¾ of an inch being slightly thickened. In the first the tumour seemed smooth, but in the second it presented a distinctly granular appearance. There was more contraction in the first than in the second, and it gave the distinct impression that some cicatricial growth was present; but the appearances in the second did not lead me to suspect malignancy. The granular appearance on the surface I felt inclined to look upon as catarrhal, probably caused by a gall-stone. There was no trace of gall-stones in either case, but the ducts and gall-bladder were much dilated and the bile much inspissated. Microscope No. 2 showed that the first is a case of colloid cancer, and its remarkably small size and localization contrast strongly with the conditions seen in the last case. Microscopes Nos. 4 and 5 show that the second is a malignant adenoma in an early stage, the granular surface being due to the proliferation of the gland spaces. There is well-marked infiltration of the muscular coats.

The liver substance was markedly jaundiced in both cases, and there was a little biliary cirrhosis. Necrotic areas and abscesses were present in the first, shown in Microscope No. 3, and the liver cells were generally much destroyed in the second, shown in Microscope No. 6, though no local necrotic areas or abscesses were present. Both cases illustrate well the destructive action which retained bile exerts upon the liver cells and the danger of asepsis following thereupon, and are interesting also in the light of Staddmann and Hunter's investigations into the irritating action of retained bile. It is possible that a poisonous or irritating substance is found even in such cases as the present. Both are powerful arguments in favour of a simple surgical operation being undertaken to draw off the bile, as thereby life may be considerably prolonged.

III. EXHIBITION OF INSTRUMENTS.

1. *Mr Caird* showed a PORTABLE STERILISER FOR INSTRUMENTS.

2. *Mr Stiles* showed an improved TONSILOTOME (MATHIEUS).

OBSTETRICAL SOCIETY OF EDINBURGH.

SESSION LVII.—MEETING II.

Wednesday, 11*th December* 1895.—Dr BALLANTYNE, Dalkeith, *President, in the Chair.*

I. THE following gentlemen were elected Ordinary Fellows of the Society:—W. Macrae Taylor, M.B. C.M., 12 Melville Street; D. J. Graham, M.B. C.M., Maternity Hospital; W. W. Chipman, B.A., M.B. C.M., Royal Infirmary.

II. *Prof. Simpson* showed—(*a.*) AN EXOMPHALIC FŒTUS which had been sent to him by Dr Macleod of Shanghai. It had been born prematurely between the seventh and eighth month, and when Dr Macleod was called to attend at the labour he found some hæmorrhage going on, and through the imperfectly expanded os found that there was partial placenta prævia. In the further progress of the case the conditions were such as he (Prof. Simpson) had shown, in a communication made to the Society ten or twelve years ago, to be common with exomphalos of a pronounced type. The fœtus was bent backward with the feet towards the nucha, and the part that was found presenting after the membranes were ruptured was the herniated mass. Delivery was effected by bringing down first one and then both of the feet, and so extracting the infant.

(*b.*) AN ANENCEPHALIC FŒTUS WITH SPINA BIFIDA extending through the cervical and dorsal vertebræ. Dr Morgan of Pontypridd, who had kindly sent the preparation, had indicated that it was the second child produced by a woman, æt. 34, who is the subject of goitre and has two brothers of feeble intellectual development—one of them, indeed, being a harmless idiot who has the habit of keeping his tongue protruded all day long. Labour set in at the seventh month of pregnancy with strong pains and hæmorrhage, which was found to be due to lateral placenta prævia. The head presented, and rupture of the membranes was followed by the escape of an immense quantity of liquor amnii. The placenta was small; the cord 36 inches in length. This patient's first pregnancy also terminated in the birth, at the sixth month, of an anencephalic fœtus with extensive spina bifida. She was not aware of any mental disturbance during her first pregnancy, but avers that during her last pregnancy the idiot brother made a very deep impression on her one evening by rapid protrusions of his tongue accompanied with other grimaces. During his six years' practice in the same district among a mining population, Dr Morgan has met with four cases of this variety of monstrosity.

(*c.*) A FŒTUS WITH DEFORMITIES OF THE LIMBS, from the extern practice of the Maternity.

III. *Dr Felkin* showed a new form of SAFETY-PIN, patented by Mr Robb, Kincardine O'Neill.

IV. *Dr F. W. N. Haultain* showed—(*a.*) A specimen of HÆMATOMA OF THE OVARY removed from a patient, who offered the following interesting history:—B. S., 24 years of age, unmarried, suffered from symptoms of pelvic trouble for four years. Two years ago she had a very severe pain in her right side, which, though it was improved at the time by vaginal douching, etc., had remained constant ever since. Six weeks before coming under my care patient had a similar, though more severe pain in her left side, which had incapacitated her from work ever since, and for which the usual remedies had been applied without effect. Her temperature was subject to marked variations, occasionally rising to 103° F. Vaginal examination revealed enlarged and tender ovaries, that on the left side being so exceptionally tender that palpation without an anæsthetic was impracticable. Abscess of left ovary was diagnosed, and oöphorectomy performed. The left ovary was found enlarged, and on section shows in its centre a firm, well-defined blood-clot, about the size of a pigeon's egg, evidently due to the extravasation of blood into a cyst. This origin was corroborated by microscopic examination. The right ovary shows a large cyst containing granular débris, probably also the remains of a previous hæmatoma. Since removal patient has been relieved of all pain, and is able to work as usual.

(*b.*) A specimen of probable OVARIAN HYDROCELE he had acquired post-mortem from a patient who died of cardiac disease, and in whom no symptoms of pelvic trouble had been complained of. The entire internal generative organs had been removed. On the left side of the uterus was a cyst, evidently filled with darkish fluid, to which the ovary was attached, and in which the left tube terminated. On the right side was a smaller cyst, apparently situated between the layers of the broad ligament, and as there was no fimbriated extremity of the right Fallopian tube, it was probable that it opened into this also. On close examination of the large cyst, it certainly at first sight presented the characteristics of a distended Fallopian tube, offering, as it did at one point, the peculiar roseate appearance derived from the agglutination of the fimbriæ in these cases; and, indeed, if one looked at this side only, one would certainly declare it to be a simple tubal distention. But when taken in relation to the conditions met with on the other side, where the tube, though undistended, was evidently continuous with the small, apparently intra-ligamentary cyst, it appeared probable that one had to deal with a double ovarian hydrocele. The relations of the large cyst coincided closely with the drawing of this condition described by Bland Sutton on page 113 of his book on *Surgical Diseases of the Ovaries and Fallopian Tubes.* Should it be an ovarian hydrocele, the case was of great interest, as the woman had had one child twenty years before her death, and therefore it must be evident that a Graafian follicle must have ruptured into the hydrocele sac. He might add that he had previously carefully examined a similar condition, in which an extensive hæmorrhage had distended the sac, the blood arising from a separated tubal mole. In this case it is probable the patient would have died of intra-peritoneal hæmorrhage if the sac had not been present.

(*c.*) Two specimens of SIMPLE AMNIOTIC SACS, as described fully in his paper on "A Rare Form of Abortion" (see p. 700 of this Journal).

V. *Dr J. W. Ballantyne* exhibited—(*a.*) The PHOTOGRAPH OF A DICEPHALIC FŒTUS, which had been kindly sent to him by Dr J. F. G. Pallarés of Lorca, in Murcia, Spain. Two-headed fœtuses are rare, and the one in question was the result of a labour complicated by placenta prævia; the hæmorrhage was so considerable that delivery had to be hastened artificially, and the monstrosity was born dead. There was a single placenta and umbilical cord. There were two perfectly developed and separate heads, each having its own neck; below this the trunk was single externally, and there were only two arms. Dissection showed that there were two incomplete thoraces and a double respiratory apparatus, but there was a single heart. The digestive apparatus also was single, as were the other abdominal viscera. There was a single penis and scrotum, and two lower limbs. From the appearance of the scrotum it would seem that the fœtus was born breech first. This double fœtus belonged to the variety *dicephalus*, to the group *somatopagus*, and the sub-group *dipus dibrachius*.

(*b*.) The PHOTOGRAPH OF AN INFANT WITH CONGENITAL ELEPHANTIASIS, which Dr Moncorvo of Rio (Brazil) had kindly sent to him, along with an account of the case, of which the following was a translation and summary:—The infant, a male of mixed race, was born at Rio de Janeiro, and first seen by Dr Moncorvo in May 1895. He was then five months old. The father, a half-breed, had suffered from acquired syphilis, and on several occasions had had lymphangitic attacks affecting the limbs, and specially the arms. The mother, also a half-breed, had usually enjoyed good health. She had had seven children, of whom four (the first, second, fourth, and fifth) were already dead. Whilst nursing her second last infant she had been attacked by lymphangitis in the left breast, going on to suppuration. During the last pregnancy she had had several falls, followed by more or less troublesome results. The first, a fall in the street, with bruising of the abdomen, at the fourth month, had been followed for eight days by abdominal pains. Two months later the abdomen was bruised again by a second traumatism; this was succeeded by abdominal pain, a rigor, and rise in temperature. At the seventh month she fell across the tramway rails in the street, again bruising the hypogastrium, which became the seat of a lymphangitic attack, going on to suppuration and fever of a remittent type, and lasting about a week. Again, at the eighth month, she received a blow in the abdomen, followed by slight pains. Labour took place normally at the full term, and it was at once noticed that whilst the infant was alive and active, he had an abnormally large right lower limb. None of the other children had had the like, nor had they been attacked with erysipelas or lymphangitis. The infant, who was nursed by his mother, was well nourished, slept well, and did not seem to suffer any pain: but he showed signs of hereditary syphilis (coryza, enlarged glands, etc.). There was marked hypertrophy of the right lower limb from foot to groin, which was most marked in the foot and lower two-thirds of the leg, and there were deep grooves to be recognised. The skin was smooth and of normal colour and temperature, but drier than that in other regions, and firmly adherent to the subcutaneous tissue

Palpation revealed a feeling of elastic hardness of the tissues, more marked on the dorsum of the foot, less so on the thigh. The circumferential measurements of the right thigh were about 2 cms. greater than those of the left, whilst those of the leg and foot were from 4 to 6 cms. greater in the right than in the left limb (*e.g.*, the circumference at the right ankle was 19 cms., that at the left 13 cms.). Sensibility to touch and the reaction to electricity were less marked in the right than in the left leg. The microscopic examination of the mother's blood showed only a slight exaggeration of the number of leucocytes, whilst blood serum taken from the lower third of the right leg of the infant revealed the presence of a certain number of the streptococci of Fehleisen, either single or grouped, as diplococci or in chains (method of Ziehl was used to demonstrate them). The infant was put on a course of iodide of potassium, and the limb was subjected to elastic compression, with the result (after a week) that the dimensions of the hypertrophied extremity were considerably reduced. The treatment was interrupted by an attack of malaria and diarrhœa, requiring appropriate therapeusis. The galvanic current was used later to hasten the softening of the subcutaneous tissue. This was the tenth case of the kind that Dr Moncorvo had seen, and he regarded it as supporting the theory of pathogenesis which he had advanced to explain such morbid states. He believed they were due to the passage of the streptococcus of Fehleisen into the fœtal organism through the placental circulation. In this case the mother during her pregnancy had had four lymphangitic attacks of traumatic origin, and in the blood of the infant there were found the streptococci of Fehleisen, although he (the infant) had never since his birth had either lymphangitis or erysipelas. According to this theory the elephantiatic new formation, produced during fœtal life, often arises from a lymphangitic process set up by streptococci coming from the maternal circulation.

VI. *Dr Haultain* communicated a paper by *Dr Halliday Croom* on THE SO-CALLED MITTELSCHMERZ, which appears at page 703 of this Journal.

Prof. Simpson agreed with the President in regarding this as an able and very interesting communication. That the literature on this subject was scanty was probably due to the circumstance that the patients who suffered from intermediate pains usually suffered also from other pelvic distress, so that the special symptom did not receive special attention. Dr Croom had done a good service in directing attention to it and in relating such instructive cases. He (Prof. Simpson) believed that Dr Croom was correct in attributing the symptoms to tubal distention, which, however, was very apt to be associated with ovarian inflammation; and in cases that had come under his observation the measures that had been serviceable in dealing with salpingo-oöphoritis had succeeded in relieving this symptom also.

Dr Milne Murray agreed with Professor Simpson as to the interest of Dr Croom's paper. He was also at one with him as to the comparative frequency of these cases of "middle pain." He had met with several in his practice. One of the earliest he had observed was that of a young unmarried lady who had been a patient of Dr W. L. Reid of Glasgow. Dr Reid had treated her for an attack of endometritis with enlargement of the uterus and retroversion. When she came under Dr Murray's observation the endometritis was almost cured, and she was wearing a pessary. She then complained chiefly of what she herself termed her "middle pain," which came on exactly fourteen days after the commencement of her period. The pain was intense, referred sometimes to one side, sometimes to the other, and was associated with great headache and prostration. It was most acute on the second day, and generally ceased suddenly. The only relief she obtained was by the use of very large doses of bromide of potash, which induced a sort of stupor. In this case nothing abnormal could be found in either tubes or ovaries,—the latter being not more sensitive than usual. At the time of the pain they were, however, very sensitive on examination. The steady use of the hot douche seemed to diminish the suffering considerably after some months. Some time after this her endometritic symptoms were aggravated by the effects of exposure to wet and cold, and she began to suffer from great dysmenorrhœa, and after simple remedies had been exhausted, the cervix was dilated, the cavity curetted and cauterised. This quite relieved the dysmenorrhœa, but the "middle pain" still continues, though on the whole it is less severe than at first. Another case which he saw recently is of more physiological interest. The patient is a married lady 32 years of age, and the mother of four children. Her periods are quite normal, both as to amount, sensation, and regularity, but on the fourteenth day after their commencement she is seized with a violent pain in the lower part of the abdomen, which lasts always for two, sometimes for three days. She is compelled to lie down for a part of the time. The pain generally ceases suddenly. She experienced this before her marriage for three or four years at least. On examination the pelvis seems quite normal in every way. A point of special interest is that all her four children have been born a fortnight before the calculated time, and she states that the only time she experiences sexual pleasure is for a day or two after the pain ceases, this being quite absent at all other times. Dr Murray could not help thinking that this pain was connected in all cases with the process of ovulation. In the last case this seems strongly borne out; and even in the cases cited by Dr Croom, where there was evidence of tubal distention, it seems essential to postulate some recurring process such as ovulation to provide the nervous or muscular tension necessary to effect the evacuation of the tube. Without this it is difficult to see how the periodic discharge of the contents would be brought about. It seemed to him that the occurrence of ovulation at a period midway between the menstrual processes was sufficient to account for the pain both in those cases where a gross lesion could be detected, and also in those where no such condition could be determined.

Dr J. W. Ballantyne thought a possible cause of severe intermenstrual pain might in certain instances be found in the presence of a double uterus, one of whose horns was imperforate, for it was well known that in the bicornate and didelphic organ menstruation might occur once a fortnight, the blood coming from one cavity one fortnight, and from the other the next. If one of the uterine cavities did not communicate with the vagina, then there might be an intermenstrual pain without any visible hæmorrhage. He did not quite agree with Dr Croom that it was best to adopt the German name for this condition. He thought that intermediate pain or dolor intermedius menstrualis were in some ways preferable.

Dr Haultain agreed with Dr Milne Murray in attributing the Mittelschmerz in the majority of instances to ovarian origin, and most probably to ovulation. Its marked periodicity was indicative of such an origin, and cases were by no means uncommon where periodic pain was complained of a few days before or after the period, which was to be accounted for on similar grounds. In fact, when ovulation or menstruation were not coincident in women suffering from inflamed and tender ovaries, such a condition must be expected.

Dr James Ritchie felt much interest in Dr Croom's paper as helping to elucidate an obscure subject, and also because he had, in the cases which had come under his own observation, adopted a different theory to explain the phenomenon in question. Menstruation was due to a discharge of nerve energy towards the uterus and its appendages. There were evidences that this discharge might take place independently of ovarian activity. The cycle of menstruation was usually about twenty-eight days, but Dr James Ritchie believed that there was an intermediate discharge of nerve influence of variable degree, and that the middle pain was induced in that way by mechanism similar to that which produced it at the monthly time. His reasons for believing that this nerve discharge existed, and that it might be the primary cause of the pain, was derived from three considerations. 1. In certain abnormal conditions of the cervix there was a discharge of blood at the middle of the period. 2. That if labour did not set in at the tenth cycle calculated from the last period it was often delayed for fourteen days, and in some cases happened fourteen days before the tenth cycle. 3. When a woman did not nurse, and even in some cases of subinvolution of the uterus while she was nursing, the catamenia reappeared six weeks after confinement.

VII. *Dr Theodore Shennan* read a paper on VIBURNUM PRUNIFOLIUM AND ITS VALUE IN THE TREATMENT OF DYSMENORRHŒA.

Dr Craig remarked that he would have liked to have heard the other Fellows of the Society state their experiences of viburnum prunifolium before giving his own opinion. He said the Society was much indebted to Dr Shennan for his paper. He (Dr Craig) had exhibited the drug to the Medico-Chirurgical Society in November 1883, and had for years previously lectured on the drug to his class. In his experience he had found it a valuable uterine sedative and a most powerful medicine for checking uterine hæmorrhage, and above all for preventing threatened abortion. He explained that when once a threatened abortion had proceeded a certain length, no medicine could stop it, but gave it as his opinion that if an abortion could be prevented by medicine,viburnum prunifolium would do it. He also explained that in the case of a dead fœtus it would not prevent abortion, nor was it desirable to do so. He regarded it as a most valuable drug, and one which should be extensively used.

Dr J. W. Ballantyne had found viburnum of special use in threatened abortions where hæmorrhage without marked dilatation of the cervix was the leading symptom. He thought it was best given inspissated and in the form of capsules.

Prof. Simpson agreed with Dr Craig in regarding the drug as distinctly efficacious in checking the symptoms of threatened abortion. It might be difficult in such cases always to say that to the administration of the viburnum the good result was due, but the results in his own experience had been such as to lead him to believe that it had a very marked effect in allaying uterine action. It was a very important service that Dr Shennan had rendered to obstetrics and gynæcology to investigate the constitution and mode of action of the drug, and the Society was to be congratulated on having a communication of this scientific value brought before it. No doubt Dr Shennan's paper would lead to more frequent employment of viburnum in practice, and probably at a later period it would be followed by further clinical observations.

Dr Haultain said that after a considerable experience in the use of the drug he had no hesitation in commending it as a uterine sedative,—an action which was fully justified by its effect in quieting after-pains, and also the painful, irregular, and useless contractions occasionally met with in the first stage of labour. Its palliative effect in dysmenorrhœa was probably due to its quietening the contractions of the uterus, which was trying to overcome the obstruction to the menstrual flow, caused by spasm of the os internum or other conditions. That it tended to relieve the spasm was also consistent with this theory of its action. Its action was thus much like opium, without the analgesic effect of the latter. Its sedative effect in cases of threatened abortion was undoubted, but only where these were due simply to uterine contraction. If, however, much separation of the ovaries had already occurred, or if the embryo or its appendages were diseased, it was obviously useless. The capsules were undoubtedly the best manner of prescribing it, as its taste was intolerable to most.

Dr Macvie congratulated Dr Shennan on having done a valuable bit of work. He had noticed that Dr Shennan did not make a large claim on behalf of viburnum as a uterine sedative and antispasmodic, or as a cardiac depressant. That coincided with the clinical experience he had had of the drug. He could not regard it as at all equal to opium or potassium bromide. Some cases of miscarriage it did not seem to touch at all. In a case of recurrent miscarriage at the sixth month the fœtus was expelled as usual, although viburnum had been used for a month previous.

Dr Shennan replied.

VIII. *Dr F. W. N. Haultain* read a paper on A RARE FORM OF ABORTION, which appears at page 700 of this Journal.

Dr J. W. Ballantyne had met with some instances of the same anomalous forms of abortion as Dr Haultain had described, and one or two of them he had shown to the Society. He was not prepared to believe that the absence of the embryo from the abortion-sac was always due to absorption or dissolution in the liquor amnii, for he thought that the researches of Giacomini and others had shown that the blastodermic vesicle might develop without the embryo appearing at all in the germinal area. He had often pointed out the value and interest of the examination of all cases of early abortion ; unfortunately many of these specimens did not fall into the hands of observers so accurate as Dr Haultain.

Dr Haig Ferguson had listened with much interest to Dr Haultain's paper. He had met with at least one similar case of expulsion of the entire amniotic sac in an abortion, the chorion and decidua being left *in utero.* He desired to call attention to the same thing happening in a full-time labour. For example, just last week, in an otherwise normal labour, Dr Ferguson had expressed the placenta in the usual way, and found that only the amnion was attached to the placental margin, while the chorion and decidual remains were absent. The amniotic membrane was perfectly complete, with an almost central rupture. In consequence of this deficiency of the membranes he passed two fingers through the cervix and removed with comparative ease a very considerable mass of membranes. He mentioned this case in connexion with Dr Haultain's paper, to impress the importance of a very careful examination of the membranes (in addition to the placenta) after every labour, in view of the possibility of a contingency such as he had described. There was no sign of disease about the placenta or membranes in this case.

Prof. Simpson said he was in the habit of teaching his students to note that the different products in cases of abortion varied according as—1, the uterus cast its entire contents. In that case the external covering consisted of decidua vera with the placental or serotinous area all complete. 2. There might be the ovum and its decidual wrappings complete, with the exception of the placenta or a portion of it. 3. The vera might be left, while the ovum escaped encapsuled with the reflexa and carrying with it the serotina. 4. There might be reflexa and its contents, with fragments only of the serotina. 5. The reflexa also may have burst and the ovum alone be extruded, presenting on its outer aspect the shaggy surface of the chorion. 6. In other cases the chorion as well as the uterine membranes has been torn and left attached to the uterus, so that only the amnion with its contained liquor amnii and embryo was discharged. It was to this variety that Dr Haultain's interesting cases belonged.

Dr Haultain thanked the Society for their discussion on his paper, and remarked that his object in introducing the subject was principally to bring before the Fellows of the Society the fact that such a variety of abortion occasionally occurred, as he took the liberty of presuming that such might not be known to some,—the scant if not entire absence of description of the condition in most of the popular books on midwifery having at least allowed him to be ignorant of the condition, till his attention was drawn to it by the actual specimen.

ROYAL MEDICAL SOCIETY.

Nov. 29.—Dr Bowes in the Chair.

Dr Henry J. F. Simson delivered his Presidential Address. After thanking the Society for the honour they had done him, he proceeded to sketch some aspects of the development of Hindu Mythology, remarking that in choosing a subject not directly connected with medicine he followed the example of some of his illustrious predecessors. He suggested that it might add to the usefulness of the Society if they could devote an evening or two during the session to the discussion of some subject apart from medicine.

Dr Simson was awarded a hearty vote of thanks, proposed by *Dr Giles*, and seconded by *Dr Macaulay*.

Mr Bramwell described a case of disseminated sclerosis in a married woman, aged 28. She was admitted to the Infirmary in July. Four years previous to admission, when at the mid-term of pregnancy, she felt twitchings and pricking sensation in right side of face, some loss of power in tongue, deafness of right ear, defective articulation, numbness of hands and feet, marked vertigo, and headache, chiefly frontal, without impairment of general health. Within a month all the symptoms disappeared, except deafness, vertigo, and numbness of hands and feet. Four months after onset of illness she gave birth to a full-time child. About a month after the birth she suddenly lost power over her right foot while walking, but soon recovered it again. This occurred repeatedly, the foot suddenly feeling heavy, but soon recovering. Fourteen months after onset of illness she suddenly lost power of right leg, and had to be driven home in a cab; and ever since then her power of walking had been very much impaired. She had also twitchings of both legs, especially the right. Paralysis of the right arm suddenly occurred a month or two after that of the leg. It had since gradually improved, although still weak. About the same time the right eye began to turn out and became blind. Within a fortnight sight was restored, and it had returned to its normal position. A year ago she began to lose control over bladder and bowels. Before this illness her health had been good. On admission she was a strong, healthy-looking woman, with good colour. Her mother died of a "stroke." Her children, three in number, were strong and healthy. She had had two miscarriages—one before, the other after her second child. There was no ground for suspecting syphilis. She could not walk without support, and dragged her right foot in a distinctly spastic manner, complained of weakness in back; and percussion of spine revealed slight tenderness over all the lumbar and two lower dorsal spines. She could flex and extend at hips and knees against resistance, but there was weakness of right ankle and toes. Right angle of mouth drooped a little. Other symptoms were marked lateral nystagmus when the eyes were turned to the right, impairment of hearing on right side, intention tremor of right hand, right calf thinner than left, probably from disuse; exaggeration of patellar reflex, especially on right side; distinct ankle clonus on right side; sharp stabbing pain under both breasts, sometimes lasting for a day at a time; obstinate constipation, and loss of control over bowels and bladder. An important symptom was the existence of very distinct pallor of right optic disc, which seemed to indicate the structural change.

The case was discussed by *Drs Donald*, *Carmichael*, *Simson*, *Bowes*, and *Mr Williams*.

Dr Andrew Balfour showed a microscopic section of an epulis which had been removed from the upper gum of a woman aged 45. The tumour was of the size of two peas, of the colour of the gum, and was situated just above the left central incisor. There was no pain or tenderness, but some discomfort from protrusion of lip. On examination it was found to show thickening of rete Malpighii, and the general tissue of it consisted of round epithelioid cells, apparently typical tubercles, with well-marked giant-cells; but no bacilli were found.

Mr Blaikie and *Dr Giles* spoke.

Dr Donald Macaulay then read his dissertation on Pustular Affections of the Skin. The human skin, he remarked, was a complex organ, which, besides being subject to the incursions of a numerous fauna, might be said to possess normally an abundant flora, which only awaited a lowering of its vitality to make their presence known in various forms of skin disease. Pustular affections were especially interesting,—affording, as they did, easily accessible illustrations of the way in which microbes invaded the tissues. The investigations of Unna, Bockhart, and others had shown that the various kinds differed considerably in their modes of attack; that, *e.g.*, some, chiefly staphylococci, were leucotactic, attracting leucocytes and causing pustulation; others, chiefly streptococci, were serotactic, causing serous effusion; and they had largely confirmed the view that the microbes were not actually devoured by the leucocytes, but were poisoned in the serum excreted possibly by leucocytes, also largely by adjacent cells. A more thorough investigation into the actions of cantharidin and croton oil on the skin would probably throw light on the analogous actions of microbes. Dr Macaulay also described the histology of several pustular skin affections in considerable detail.

Mr Williams and *Dr Giles* spoke.

Dec. 6.—Dr Macrae Taylor in the Chair.

Dr Logan Turner gave a Lantern Demonstration on Displacement of the Semilunar Cartilages of the Knee-joint. He showed many photographs which he had taken of joints, both complete and in section; also of detached cartilages, arranged so as to illustrate the mechanism of displacement, of which he gave a full account, as well as of the anatomy of the joint. He held that the cause of the greater frequency of displacement of the internal semilunar cartilage was threefold:—1, It was more firmly fixed than the external; 2, owing to the greater range of outward rotation, its attachments were more subject to strain; 3, owing to the ordinary position of foot and leg, there was greater liability to outward rotation. He referred to twenty-nine cases in which the diagnosis had been confirmed after incision for operation. In most of these the symptoms had been preceded by a definite injury. A rationale of the symptoms, by reference to the mechanism, was given, and some of the cases described more in detail. Treatment was also considered. It fell under three heads:—1. Immediate replacement of the cartilage in a recent case, or on the recurrence of an old-standing case. 2. Palliative treatment for bringing about reunion of torn ligaments, or, if that failed, for preventing the cartilage slipping. 3. Operation, which consisted either in stitching the detached portion to the capsule or other fibrous structures covering the head of the tibia, or the removal of that portion.

Mr Colman said that for three years he had a loose internal semilunar, which was now in Dr Caird's museum. For nine months before the cartilage became actually loose he had pain in the knee when playing fives or football. It was attached by one end.

Drs Alexander, Bowes, and *Taylor* also spoke.

Dr Wm. A. J. Alexander read a dissertation on the Relation of Crime to Disease. He first drew attention to various analogies and points of difference between social and physical organisation. The phrase used by Herbert Spencer in his *Principles of Sociology*, to the effect that while the physical organism had a single sensitive centre the social organism was sensitive in all its units, indicated, if it did not adequately express, the unique importance as a social factor of the possession by man of fully developed self-consciousness. There was community, however, in the fundamental principles of organisation, in accordance with which the units tended to act together for mutual benefit. Disease being definable as rebellion of or defect in the units, crime might be regarded as a social disease. The question was, Had it any physical basis? From the fact that a man was an abnormal social unit, was it to be inferred that he was also an abnormal physical aggregate? Reference was then made to the Italian school of criminal anthropologists, and especially to Lombroso of Turin, who, under the influence of Darwin and Broca, investigated the subject of criminality on strictly anthropological lines, endeavouring to correlate mental with physical characters. After a survey of the main features, structural and functional, to which attention had been directed as tending to mark out a criminal type, the relation of criminality to insanity was dealt with, and the conclusion arrived at that, since there was no hard and fast line between sanity and insanity, there ought to be none between punishment and treatment. It was altogether a question of which, or what combination, of the two would be most effective for the reform of the individual offender and his restoration to useful citizenship. The Elmira Reformatory in New York State was referred to as a notable example of the good effect of education on criminals, even the higher education. The prison system ought to be so organised as to give the criminal's inhibitory powers the best chance of asserting themselves. The importance of the social factor in crime was emphasized, and the necessity of attacking it by wise legislation and education. The organic factor, to which it was complementary, and which might be said to consist in a want of balance in the nervous system transmitted by heredity, even if established to the full extent claimed by criminal anthropologists, which might be doubted, would not amount to more than a predisposing cause, whose tendency might or might not be neutralized by other influences, including social environment and education

Discussion followed, and was taken part in by *Mr Cuthbert, Dr Wishart, Messrs Ross, Williams, M'Nair Scott, Fletcher, Walker, Chiene, Ritchie, Dr Giles*, and *Mr Belasco.*

Dr Macrae Taylor described a case of Pneumothorax in a youth æt. 17. His father, a stonemason, died of sclerosis at the age of 41. He was admitted to hospital in March, after suffering from cough and dyspnœa for three months. He was not habitually alcoholic, but had been badly fed for some time. After admission his temperature ranged between 100° and 103° for a month. The heart was found displaced to the right, the cardiac impulse diffuse, and 1 inch below and internal to right nipple. The cough was not frequent, and there was occasional epigastric pain. Over whole of right lung there was diminished vocal fremitus, hyper-resonance to percussion, amphoric breathing, and the clanging anvil sound produced with two coins was well marked. He was once aspirated, and in May was dismissed much improved; but was readmitted in September with frequent and painful cough, frothy and scanty expectoration, vocal fremitus absent over left lung, except at apex where it was diminished, increased on right side, left side dull all over to percussion, right resonant except over area invaded by cardiac dulness. Aspiration was thrice performed. The patient was still under treatment. The case was diagnosed as hydrothorax following pneumothorax following pulmonary phthisis.

Part Fourth.

PERISCOPE.

MONTHLY REPORT ON THE PROGRESS OF THERAPEUTICS.

By William Craig, M.D., F.R.S.E., Lecturer on Materia Medica, Surgeons' Hall, etc., etc.

Topical Action of Salol.—Colombini (*Rif. Med.*, September 14, 1895) has been experimenting with regard to the local effects of salol dissolved in liquid vaseline. In the presence of alkaline fluids or living tissues salol appears to break up into salicylic acid and phenol in the nascent state. When split up in this way the author found that, whilst the good antiseptic action of each of the acids was maintained, their irritant action was absent, either from the way in which they were set free or from the small quantities evolved. Clinically it was found that salol in vaseline solution—the best solvent—did not irritate the skin nor inflame ulcerated surfaces, which healed under the treatment without pain or local reaction. The author thinks there may be a useful field opened up in the local application of salol as a non-irritating and sufficiently powerful antiseptic.—*British Medical Journal*, November 2, 1895.

Serumtherapy of Cancer.—Salvati and Gaetano (*Rif. Med.*, August 19 and 20, 1895) give the result of their clinical experience in the treatment of cancer by injection of serum derived from a horse which had been previously inoculated (through the trachea) with an infusion of triturated sarcoma. Five patients suffering from undoubted cancer, mostly relapses after previous operation, were subjected to the treatment. No ill results were observed after injection. The lacinating pains, in the majority of cases, disappeared completely for a time after ten to twenty injections, but, as a rule, returned again with their previous intensity. Hæmorrhage from the ulcerated surface was a frequent occurrence after injection. The tumours were observed to diminish in size in the early part of treatment; still, notwithstanding the manifest improvement at the beginning of treatment, no real arrest of growth took place in any of the cases, so that one cannot speak of the treatment of malignant growths by injections as in any sense a cure.—*British Medical Journal*, October 12, 1895.

THE EFFECT OF PEPPERMINT INHALATION ON TUBERCULOSIS.—Baldwin gives the results of an experimental research on this subject in the *New York Medical Journal* for May 18, 1895. Coincident with the clinical trials of the peppermint treatment described by Carasso, carried on at the Aridonack Sanitorium, the following experiments were undertaken at the Savanac Laboratory under the direction of Dr E. L. Trudeau:—1. To test the effect of the vapour of peppermint oil upon pine cultures of bacillus tuberculosis, as a preliminary to, 2, a test of its influence on the course of the disease in animals inoculated per tracheam, and kept in an atmosphere charged with the vapour. A few animals had first been treated subcutaneously by an emulsion of the oil, but very little of it was absorbed, and the method was abandoned as impracticable. The experiments of Chamberlane, Lucas, Championnière, Koch, and others have shown the disinfecting power of ethereal oils. The contact of the oil itself was found unnecessary to kill or inhibit the growth of bacteria. The results seem to warrant the conclusions: 1. Although ol. menth. pip. may prevent bacillus tuberculosis from growing in a test tube, its parasite existence is not hindered by even constant inhalation of the strong vapour of peppermint. 2. Although it has a high power of diffusion, its local antiseptic action in the respiratory tract is probably slight, both on the tubercle bacillus and other bacteria. (An additional observation tends to confirm this latter view. Fully as many colonies developed on an agar plate made from a swab of the posterior pharyngeal wall of a patient inhaling peppermint faithfully at the time as on others not receiving that treatment.)—*The Therapeutic Gazette*, September 16, 1895.

THYROID FEEDING.—Eulenburg (*Deut. Med. Woch.*, August 15, 1895) draws attention to the abuse of this treatment owing to the unrestricted sale of thyroid preparations, and especially tablets. Since the investigations into the use of this agent in the reduction of obesity it has been adopted by many of the public, and especially women, without medical supervision. The author relates such a case in which a well-known artist had taken as many as six tablets in the day, whereas two tablets should only be administered, unless in exceptional cases, when the results should be carefully watched. Very severe nervous and cardiac symptoms ensued, and a loss of 19 lbs. in weight within two months. These symptoms were apparently due to a hydræmic condition of the blood without visceral lesions. Restrictions should be placed upon the sale of these thyroid preparations, as well as upon some other of the newer drugs.—*British Medical Journal*, October 26, 1895.

DIGITOXIN.—Of the various derivatives of digitalis, the one most constant in its effects, and more constant than digitalis itself, is considered by M. G. Corin (*Les Nouveaux Remèdes*, May 8, 1895) to be digitoxin. Although there has been much said against the constancy of its action, the author believes that it is entirely due to a false method in its prescription and use. In order that a fair judgment can be made, it must be administered according to the best method. It should not be forgotten, for instance, in the case of this alkaloid, that it is nearly insoluble in water. It is not alone necessary to dissolve it in water, chloroform, and alcohol, but it is also necessary to guard against its reprecipitation when it comes in contact with the fluids of the body; for if it is thus reprecipitated, its action may become cumulative, when it is again absorbed in mass. Effects entirely dissimilar may thus be produced by the same dose. To avoid such results the author employs the following formula:

℞ Digitoxin, gr. $\frac{2}{64}$ to $\frac{3}{64}$;
Chloroform, ♏x.;
Alcohol at 90° F. ʒiij.;
Aquæ dest., q. s. ad F. ℥v.
Sig.—To be taken in three doses.

With this solution the author has never seen a reprecipitation when in contact with water or physiological fluids or serum. On the contrary, solutions in alcohol of 20 per cent. strength, which some authors have employed, reprecipitate under similar circumstances, thus explaining the failures which they experienced in their experiments. The drug has been used with excellent effect, and has proved clinically its superiority over the other alkaloids derived from digitalis in the treatment of cardiac asthenia and pulmonary weakness. The author has published his experiments and clinical research that lead him to believe that digitoxin has a veritable abortive action in the progress of an infective pneumonia. —*The Therapeutic Gazette*, September 16, 1895.

THE USE OF VINEGAR FOR THE ARREST OF VOMITING AFTER THE ADMINISTRATION OF CHLOROFORM.—Lewin (*Rev. de Chir.*, September 1895) has obtained very good results with regard to the prevention of sickness after the administration of chloroform by immediately replacing the inhaler by a linen cloth steeped in vinegar, and allowing this to remain over the patient's face for at least three hours after the completion of the operation. He points out that chloroform, which is eliminated almost exclusively by the lungs, is decomposed in the presence of the inspiration into formic acid and chlorine. The latter agent when set free irritates the larynx and trachea, and thus is one of the chief causes of the vomiting induced by chloroform. On the application of vinegar in the above-described manner, the chlorine is taken up by acetic acid and thus rendered harmless. The author further points out that in order to prevent the desiccating action of chloroform on the tissues, it is necessary for the patient to inspire after the operation air that has been rendered humid. Acetic acid, both from the water it contains and from its energetic capacity of dissolving fibrine, serves to prevent coagulation of the blood. The beneficial action of vinegar in cases of anæsthesia by chloroform may also be explained by the fact that acids in general stimulate the respiratory passages. It is very unnecessary, the author thinks, to attempt to explain this favourable influence of vinegar by a hypothetical action of acetic and other acids on the vomiting nerve centre through the vasomotor nerves.—*British Medical Journal*, October 19, 1895.

PERISCOPE OF OBSTETRICS AND GYNÆCOLOGY.

By J. W. Ballantyne, M.D., F.R.C.P.E., F.R.S.E.

Stricture of the Female Urethra.—Dr J. Fischer points out that the text-books have little or nothing to say regarding stricture of the female urethra, and that clinical observations of the morbid state are very scanty. Of late years, however, Ernest Herman, Kleinwächter, and Ely van der Warker have added to our knowledge of the condition, and Fischer himself now records four cases of urethral stricture in women from Prof. Chrobak's Frauenklinik in Vienna. In one case the patient, a married woman, 56 years of age, who had neither borne children nor aborted, complained of pain during micturition, which had lasted for sixteen months. Urination also was difficult and frequent, the patient having often to rise five times in the night. The urethra would only allow the passage of a No. 2 (2 mm.) Hegar dilator, and the narrowing began about ·5 cm. above the external urethral orifice. A little bleeding followed the examination, and the urine showed a phosphatic sediment. The stricture was dilated, every second day, with Hegar's dilators, and in nine days a No. 6 could pass, and an endoscopic examination of the canal was made, when the lumen was seen as a vertical fissure about 1 cm. above the meatus. About a year later the patient was seen again; she was then quite free from the stricture. The second case had a very similar history, whilst the third patient was a married woman, 44 years old, who had had four normal labours and two abortions. In the last-named case the stricture was situated 1·5 cm. above the meatus, and only allowed a 3 mm. uterine sound to pass through. Many causes of stricture have been advanced, such as injuries during labour, tumours of the urethral walls, syphilitic ulceration and cicatrix formation, and senile narrowing from a general fibrous thickening and induration of the urethra (Herman). Fischer does not think that his first two cases were examples of senile stricture, for each showed a circumscribed true cicatrix. It is possible that in some cases the narrowing may be a reflex neurosis.—*Centralblatt für Gynäkologie,* No. 39, 1895.

The Causation of Face Presentations.—In an exhaustive monograph Dr Roberto Muggia discusses the various alleged etiological factors in face cases, and gives in a tabular form the details of 41 such labours. The frequency with which these confinements occurred was once in 137 cases (41 in 5644 labours), and of the 41 instances met with, in 25 the chin of the child was to the back and right side, in 2 it was to the front and left, in 2 to the back and left, in 2 to the front and right, and in 5 it lay transversely and to the left. Amongst the fœtal causes for the presentation found by Muggia were fœtal struma, coiling of the cord round the neck, dolicocephaly, absence of the cranial vault, small size of the fœtus, oblique position of the fœtus, maceration, increase in the biparietal diameter, abnormal size of the head, abnormal shortness of the neck, and the female sex. The maternal causes included repeated pregnancy, hydramnios, uterine obliquity, uterine tumours, low implantation of the placenta, and pelvic contraction. In addition to the causes given in this already long list the author adds those that have been advanced by other writers, but which he has been unable to confirm. It would seem that the fœtal causes are the more important, and heredity may even come into play. A practical conclusion is that, if a face case evidently represents the expression of given anatomical conditions, maternal and fœtal, the intervention of the obstetrician is in the great majority of cases unnecessary. The genu-pectoral position of the patient in labour is advisable in order to aid the rotation of the chin. All external and internal manual interference should be undertaken only in definitely ascertained cases and under certain circumstances, for the fœtus which presents by the face will often come safer thus into the world than if its presentation is modified. In only one of the author's cases was an asphyxiated infant not resuscitated. Of course, it would be absurd to say that a face case is more favourable than a vertex; at the same time, in the circumstances, presentation by the face may be a natural way of escape.—*Annali di Ostetricia,* September and October 1895.

A Recto-vaginal Fistula Operated upon during the Puerperium.—The case reported by Dr Auvard was one of a woman, 33 years of age, who had on two previous occasions been confined without the assistance of a medical man. From the time of the second confinement the patient noticed that fæcal matters passed from the vagina when she had diarrhœa. She was now in labour for the third time, and delivery took place normally, the infant being alive and weighing 3600 grammes. A recto-vaginal fistula, admitting the tip of the index finger, was found 3 cms. above the vulvo-vaginal orifice. The fæcal matters came entirely from the vagina, and, therefore, on the eighth day of the puerperium Dr

Auvard operated on the fistula, and with complete success. The case was noteworthy in several ways: the origin of the fistula was obscure, for the labour which it followed was easy and uncomplicated, and the operation was performed on the eighth day post-partum, nearly on the day after certain manifestation of septicæmia, and yet with good results.—*Archives de Tocologie*, September 1895.

A NEW METHOD OF HYSTERORRHAPHY.—Dr George R. Fowler, finding that all the existing plans of performing ventral fixation for uterine retro-displacements were unsatisfactory, cast abroad for some structure which should sufficiently approach the normal to afford a greater stability for support of the organ when restored to its normal position. The new operation, which Dr Fowler has performed ten times, consists essentially in *making use of the superior ligament of the bladder* for the purpose of forming an artificial utero-ventral ligament. This prominent fold of peritoneum contains, of course, the urachus and obliterated hypogastric arteries. The usual median abdominal incision is made, and the urachus identified as it passes close to the edge of the peritoneal incision on the right side. Its upper extremity is cut directly across, and the cord, together with a ribbon-shaped strip of the peritoneum about 1 cm. wide, is detached by dissecting it loose with the scissors down to the level of the lower angle of the abdominal wound. The uterus is then brought up into position, and a Cleveland ligature carrier passed beneath its serous and subserous connective tissue investment at a point upon the posterior aspect of the fundus. The point of the ligature carrier emerges about 1 cm. from the place of entrance, its jaws are opened and made to grasp the free end of the ribbon of peritoneum containing the urachus, and this is drawn through the opening made by the ligature carrier by tightening its jaws and withdrawing the latter. The urachus is then replaced, and secured in position by being included in the layer of sutures which close the peritoneal opening. The entire operation can be done very quickly, and Dr Fowler hopes other gynecologists will give it a trial.—*New York Medical Journal*, October 5, 1895.

CRANIOTOMY, SYMPHYSIOTOMY, AND CÆSAREAN SECTION.—In a paper in which he considers these three obstetric operations, Dr John G. Cecil says that craniotomy, in the light of modern surgical achievements, is not indicated upon a living child, although it may be used for monstrosities, hydrocephalic and dead infants, but even then not in extreme narrowing of the pelvic canals. Symphysiotomy is a perfectly justifiable operation, which finds its ideal indication in the pelvis æquabiliter justo-minor. With regard to certain of the cases in which Cæsarean section may be employed, Dr Cecil says that, considering the frightful fœtal mortality and the great risk to the life of the mother, placenta prævia centralis constitutes a legitimate indication for this operation.—*American Practitioner and News*, August 24, 1895.

PERISCOPE OF SYPHILIS AND GENITO-URINARY DISEASES.

By Francis Cadell, F.R.C.S. Ed.

The Sexual Criminal.—In the *Medical Record*, May 11, 1895, Dr James Weir has an interesting paper on this subject. The physical characters of two white men who had been guilty of rape are given. Both were dolichocephalic and prognathous; their orbital arches were greatly enlarged, and their cheek-bones high and prominent; their genitalia were abnormally developed, and the growth of hair on their bodies rank and thick. Both had fair hair and malformed ears. No amount of legislation will ever make people accept the negro as their social equal. Common sense teaches them that he is their inferior, while science shows conclusively that he is of lower origin. Hence it happens that when a white girl is raped by a negro the disaster is simply appalling. She feels as though she had been dishonoured and defiled by some monstrous beast; her moral courage is gone for ever; her honour and her virtue can never be regained. These feelings are also entertained, to a certain extent, by her relatives, friends, and, in fact, by every white individual in the whole country. Not long since, a young lady in a neighbouring State was dragged from her horse, carried into the woods, choked into insensibility, and repeatedly ravished by a negro. She was found, half dead, by a searching party late that night. Bloodhounds were put on the track of her assailant; he was caught, brought before her, identified by her, and at once hung. This young woman came near dying from her injuries, but finally recovered. She, however, never left her home again; but, soon after she was able to leave her bed, she went into an outhouse and hung herself. Her father came home, and on finding the dead body of his daughter seized his revolver and blew out his brains. The following night her brother drowned himself. Her relatives sold their real estate and personalty and left their native town for ever. The question naturally arises, Does lynching act as a preventive and a protection against the crime of rape? My own personal observations, as well as those of many conservative men, both north and south, teach me that it does. For, if a violator is apprehended and lynched in a community, the crime of rape does not occur in that community for many years; or, if it does occur, the individual committing the outrage will be found to be either a stranger who has recently come into the community, or a young man who has reached maturity since the time of the last lynching. Statistics gathered from every section of the country show that a like result does not obtain when the sexual criminal is punished through due process of law. The lesson taught by lynching creates, beyond any shadow of doubt, a profound impression, and this impression remains tangible and vigilant throughout the lives of would-be violators, causing them to curb their lust and to pay a fitting regard to the laws of society. It has been urged, as an insurmountable objection to lynching, that many innocent men are put to death by the unreasoning mob, which, carried away by its passions, hangs the first suspicious-looking individual it finds I have carefully studied the evidence in forty-three lynchings of sexual criminals, and have found that the lynchers had, in every case, secured and hung the right man. These forty-three cases have occurred during the last twenty-three years, and have been taken indiscriminately from all over the country. I have gathered my information concerning them from the most conservative and level-headed men of the communities in which the lynchings occurred, consequently can safely assert that my conclusions are based on indisputable facts. Purists condemn the lynching of the sexual criminal, and declare that his lynching is fundamentally an illegal act, hence a criminal act. I hold that no act is criminal that benefits society. There is a higher law than the written law of man, the law of the preservation of species, coincidently of civilisation. The crime of rape is distinctly atavistic, hence it is a menace to civilisation, and should be suppressed, no matter how.

WHAT IS GONORRHŒA IN WOMEN? (by Frederick A. Lyons, A.M., M.D., *American Medico-Surgical Bulletin*, May 1, 1895).—Gonorrhœa is a very prevalent disease in women of all classes of society, and is a serious malady. Clap in the male is often looked upon as a mere bagatelle, and the man unfortunate enough to contract it is considered a good subject for jest and merriment on the part of his companions. In a majority of cases, perhaps, if the disease were properly handled, and necessary precautions taken before pronouncing a cure, it would be a comparatively harmless affection. But, unhappily, this is not the case in most instances, and Ricord's maxim holds good, "A clap commences; God only knows when it will end." As at present understood, or rather misunderstood, by the large majority of the profession, the disease is not only not harmless, but is a most serious malady, if the number of grave consequences that arise from it are taken into consideration. Syphilis has generally been considered the most troublesome and dangerous of the venereal affections, but I think a close and careful comparison will give not a slight disposition to dethrone it from its pedestal. If this be no exaggeration of the evil results of gonorrhœa in the male, can we be too emphatic in expressing our opinion on the gravity of the disease when it occurs in the female? Consider the extent of surface exposed to its ravages in the female genital organs—the uterus and Fallopian tubes, with their extremities opening directly into the peritoneal cavity; reflect for a moment on all the consequences entailed upon the unhappy victim when the disease has invaded these regions, and the seriousness of the malady begins to be apparent. Sinclair, in his valuable monograph, remarks, "Gonorrhœa in the woman is as ruinous as syphilis; there is little to choose betwixt the diseases." Again, "Gonorrhœal infection in women gives rise to a group of diseases which, by reason of their clinical interest and their social and moral consequences, surpass in importance every other class of affections which claim the attention of the gynecologist." Let me also recall the words of Lawson Tait: "Early in life I heard one eminent surgeon, one of my own teachers, say that if he were condemned to have a venereal disease, he would rather have syphilis than gonorrhœa. I marvelled and disbelieved, but now I know that, if he included women in his thoughts of the subject, he spoke truly. Syphilis is a relatively harmless disease. It may cause discomfort and distress, and even much pain, but I doubt if it ever kills women. If it does, where syphilis kills its tens, gonorrhœa kills its thousands; and it would take the sufferings of a hundred cases of syphilis to make up for the long, weary years of agony of one case of gonorrhœal pyosalpinx."

THE DIAGNOSIS OF SYPHILIS OF THE NERVOUS SYSTEM IN THE ADULT.—An article with this heading is to be found in *Gaillard's Medical Journal*, April 1895, by Dr W. B. Pritcherd. "To summarize, briefly, these various diagnostic symptoms in syphilis of the nervous system,—we have headaches, characterized by nocturnal exacerbation, associated with insomnia, present during the first half of the night; vertigo with the headaches, sometimes amounting to transient unconsciousness; tremors, paresthesiæ, and weakness, often affecting a limb which is afterwards paralyzed; a general condition of profound subjective physical weakness and mental sluggishness, with final paralysis of one or several muscles, erratic in distribution, usually of gradual onset, varying in degree from day to day, and occurring at night,—the headaches and insomnia disappearing, as a rule, immediately upon the onset of paralysis. This combination of symptoms occurring in a middle-aged adult is as nearly positive evidence of syphilis as a cause as is any axiom in medicine. Should there be in addition an admitted history of infection or concomitant lesions in the skin, bones, or viscera, the diagnosis is positive. The therapeutic test is of value—great value—but it is not absolute. I have seen cases of non-specific tumour and of tubercular meningitis very greatly improved temporarily while taking mercury or iodide of potassium. It is scarcely necessary to emphasize the necessity for exclusion in making a diagnosis of syphilitic disease of the nervous system. The factors of age and sex are of importance, especially in exclusion, since the disease is more common in men, and the age of 25 to 40 represents the period of life in which syphilis of the nervous system most often manifests itself. The diagnostic data enumerated are applicable to all forms of central specific disease of the nervous system, both cerebral and spinal, though less constant in the spinal cases. Syphilitic disease of the peripheral nerves alone is rarely observed. The explanation, to my mind, of the fact that these symptoms are common to both cerebral and spinal syphilis lies in the belief that we do not meet with disease of either brain or cord alone, but that in all cases both are involved, though in varying degree, of course. Producing disease of the nervous system, as it does, through the medium of the bloodvessels, syphilis is never limited to a circumscribed area, and this is true even when a post-mortem reveals by gross examination only a single gumma. I have seen headache and insomnia with vertigo precede for several weeks a paraplegia due to a specific meningo-myelitis, not associated with any local cerebral symptoms whatever. I have found these same symptoms present in the early histories of four cases of locomotor ataxia, and I do not believe that syphilis produces symptoms of organic disease of either brain or cord alone, but that in all cases both are more or less involved, usually through the bloodvessels supplying the meninges primarily."

Part Fifth.

MEDICAL NEWS.

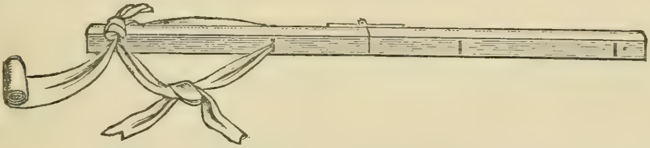
ROYAL COLLEGE OF PHYSICIANS, EDINBURGH.—The following gentlemen passed their Final Examination, and were admitted L.R.C.P. Ed.:—George Duncan, Liverpool; and William Somerville, Edinburgh.

BRITISH BALNEOLOGICAL AND CLIMATOLOGICAL SOCIETY.—At a meeting of medical practitioners connected with British Health Resorts, held at Limmer's Hotel, Conduit Street, London, W., on the 9th November last, the above Society was formed to carry out the following objects:—1. To provide means for the Association of Medical Practitioners connected with British Health Resorts, and to promote good fellowship amongst themselves and with members of other branches of the medical profession; 2. To encourage the theoretical and practical investigation and study of balneotherapeutics and medical climatology; and 3. To advocate and sustain within the profession the interest and claims of British balneology and climatology. It had long been felt that such an association was needed, and the recent publication of the first report of the excellent work done by the Committee appointed by the Royal Medical and Chirurgical Society to inquire into the balneology and climatology of Great Britain seemed to come partly as a reproach and partly as an incentive to those practitioners at health resorts who are so intimately and practically interested in the subjects. It is hoped that the new society may accomplish much good scientific work, and thus assist and further the objects of that Committee as well as secure for British Health Resorts the recognition and support which they deserve from the profession at large. Dr Henry Lewis, Folkestone, was elected President. In the list of Vice-Presidents we notice the names of Drs R. Fortescue Fox, Strathpeffer Spa, and William Haldane, Bridge of Allan. Edwin

Baily, M.B. C.M., Oban, and Alexander Thom, M.A., M.D., Crieff, appear among the Members of Council. *Treasurer*, C. R. B. Keetley, Esq., F.R.C.S., London. *Hon. Secretaries*, Aylmer A. Macfarlane, L.R.C.P., Brighton, and Septimus Sunderland, M.D., London. All qualified medical practitioners connected with British Health Resorts are eligible for membership; but although the Society is intended primarily and principally for members of that particular branch of the profession, medical men not connected with health resorts, but who take an interest in the subjects of balneology and climatology, are also eligible for membership.

In accordance with the august approval of His Imperial Majesty the Emperor of Russia, the Twelfth International Medical Congress will be held in Moscow between the 19th and 26th of August (new style) 1897, under the patronage of His Imperial Highness the Grand Duke Serge Alexandrovitch. Further details about the organisation of the Congress will be published at as early a date as possible.

A Portable Crutch.—Wishing to have something light and portable to keep a patient in the lithotomy position for gynæcological operations, I had the following crutch made. I send a description and sketch of it, as it might prove useful to others.



Crutch unfolded, with one side threaded and ready for use.

It consists of two equal lengths of wood, 14 inches long. These are joined together at one end by means of a hinge on one side. In each portion are two mortices or openings, one placed 1 inch and the other 10 inches from the outer end, thus leaving a space of 8¼ inches between the mortices. Into these short bandages are threaded, the ends coming out on the side *opposite* to the hinge. A long bandage is tied into each end opening. The crutch is then placed behind the thighs just above the knee joints. The short bandages are tied in front of the thighs, and the long bandages are tied round the neck of the patient or to the legs of the table at the patient's head. Grace R. Cadell.

Adeps Lanæ Hydrosus.—Messrs Thomas Christy & Co., of London, have sent us a sample of this substance, and we can confidently recommend it.

OBITUARY.

JOHN WILLINS, M.B. C.M.

It is always a matter of regret when, as in the present instance, we have to record the death of a member of our profession in the prime of life.

Born thirty-eight years ago in Peebles, Dr Willins was the son of Mr John Willins, who succeeded Mr Alexander Bathgate as teacher in what was then known as the Burgh School, and was esteemed an admirable teacher, and who was most successful in training his pupils.

In 1875 he entered the Arts Classes at Edinburgh University, but in the following year abandoned them for the Faculty of Medicine. Pursuing his studies with zeal and success, he passed his final examination and graduated M.B. C.M. in 1880.

Shortly after graduating he became assistant to Dr Kennedy at Penicuik, where he remained for upwards of a year, at the end of which time he removed to Denholm, in Roxburghshire. The practice here was entirely to his taste; living in a district rich in historical romance, and where he could enjoy his favourite sport of fishing. But in the following year Dr Kennedy removed from Penicuik, and the practice being offered to Dr Willins, he accepted it, as opening up a better field for practice, and at the same time bringing him nearer his native district, where his family and friends resided. Here he continued to practise with great acceptance for the remaining years of his life. The tall, lithe figure and refined features of the doctor, familiar to the community amongst whom he lived, were the index of a devotion little short of heroic to his professional duties! a devotion which undermined his health and cut short his days. Three and a half years ago his elder sister died, and another sister, his twin, predeceased him just exactly a year. At that time he looked very ill, and was evidently suffering from the disease which ultimately carried him off. However, he revived wonderfully after a three months' holiday last summer; but shortly after resuming work in September the symptoms of Bright's disease became again more severe, and he succumbed to it on Christmas Day.

He was a good type of the country practitioner, being the friend and adviser as well as attendant of his patients, and at the same time a keen sportsman, especially with the rod, in the use of which he excelled.

CORRESPONDENCE.

(*To the Editor of the Edinburgh Medical Journal.*)

War Department, Surgeon-General's Office,
Washington, *December* 19, 1895.

Dear Sir,—I send you enclosed a copy of a letter which I have this day addressed to Dr Santos Fernandez, Editor of the *Cronica Medico-Quirugica*, of Havana.—Very truly yours,

Geo. M. Sternberg,
Surgeon-General U.S.A.

Dear Sir,—My attention has been called to an article in the *Edinburgh Medical Journal* of December 1895, in which our friend Dr Carlos Finlay renews his claim to have demonstrated the specific infectious agent of yellow fever.

My researches led me to the conclusion that the micrococcus tetragenus febris flavæ of Dr Finlay is often found upon the surface of the body of healthy individuals and in the atmosphere at Havana. That it is not present in the blood and tissues of yellow fever patients, unless by a rare exception, is demonstrated by my extended researches.

In view of his latest publication it seems to me that Dr Finlay, or someone else in Havana, should make the crucial experiment of inoculating several susceptible individuals with a culture of his micrococcus. I venture to predict that the result of such experiment will be to show that it is entirely harmless for man, or at most that a slight abscess may form at the point of inoculation. There should be no difficulty in carrying out such an experiment in Havana at one of the hospitals.

According to Dr Finlay's own account of the results obtained by him in his mosquito inoculations, these have never given rise to a pronounced attack of yellow fever. Dr Finlay says, in a paper published in the *Edinburgh Medical Journal* in 1894, that of 87 individuals inoculated 73 did not present any distinct attack within the first twenty-five days; "within a term of days varying between five and twenty-five after the inoculation one presented a mild albuminuric attack, and 13 only acclimation fevers." Now, from my point of view, inasmuch as 73 out of 87 of the individuals inoculated presented no reaction whatever, it seems to me that the 13 who had acclimation fevers and the one who had a mild albuminuric attack within a term of days varying between five and twenty-five after the inoculation, had these attacks, not as a result of the inoculation, but because they were in the city of Havana at a season when strangers are subject to attack by these so-called acclimation fevers.

If Dr Finlay's inoculations with his "contaminated mosquitoes" give negative results, as shown by his own report, how can we suppose that yellow fever is usually transmitted from the sick to the well by mosquitoes, as he believes? As Dr Finlay, no doubt, has now in his possession cultures of his "tetragonococcus," it will be a very simple matter to make the crucial experiment by which its specific power can be demonstrated or disproved.

In my report upon the Etiology and Prevention of Yellow Fever, published in 1890, I say:—

> "I have occasionally obtained a few colonies of this micrococcus in my cultures from the contents of the stomach and intestine of yellow fever cadavers, and in one case (Case 8, 1888) I obtained it from the liver kept in an antiseptic wrapping for forty-eight hours. In this case it was associated with staphylococcus pyogenes aureus. There is no reason to believe that it has anything to do with the etiology of yellow fever. My researches show that it is a very common organism upon the surface of the body of patients in the hospitals of Vera Cruz and of Havana, and quite as common in cases not having yellow fever as in those sick with this disease. In Brazil, in 1887, my friend Dr Goes obtained it in a culture from blood drawn from the finger of a yellow fever case in the small-pox hospital. My inference then was that its presence was accidental, and due to contamination of the drop of blood while collecting it; and

I believe this to have been the case when it has been present in Dr Finlay's cultures from blister serum. In a case of brain disease, and in a case of skin disease, in which Drs Finlay and Delgado applied blisters and collected serum by their usual method, I obtained this micrococcus in Esmarch roll-tubes to which this serum had been added. These cases had not been associated in any way with yellow fever patients, and the blister serum was collected at my suggestion as a control experiment, inasmuch as Drs Finlay and Delgado had obtained this micrococcus in their 'mosquito cultures,' and in blister serum from yellow fever cases. Its absence in cultures from the blood in a large series of cases fully supports the inference that its occasional presence in blood drawn from the finger, or in blister serum, is due to accidental contamination from the surface of the body or from the atmosphere.

"Dr Finlay himself, when I left Havana last year, had about given up the idea that this tetragenus is the cause of yellow fever. This is shown by the following letter from him ;—

"'HAVANA, *August* 29, 1889.

"'MY DEAR DOCTOR,—I send you a copy of the *résumé* of our investigations during the year, May 1888–89, which Dr Delgado and myself presented at the beginning of the year. You will see that we did not claim to have *demonstrated* that our "tetragenus" was the actual germ of yellow fever, but merely that in our recent investigations, carried out with methods which we deemed to be reliable, we had again found the same micro-organism in yellow fever finger blood and in blister serum, and also in cadaveric products of two yellow fever autopsies. We likewise expressed the hope that you would undertake comparative experiments in order to determine, first, whether it was a fact that by the culture methods which we had described our tetragenus could be demonstrated in most of the products collected during life from yellow fever patients ; and, second, whether that micro-organism is exclusively found in such patients. I am aware that the results of three samples of yellow fever blister serum and seven samples of blister serum from acclimated subjects have given a negative answer on the second point. Yet I cannot wholly divest myself of the suspicion that the greater frequency with which we have found the tetragenus in our yellow fever cultures (from material collected during life) may have some significance, even admitting, as I do, that before any etiological importance can be claimed for it, quite a number of serious objections would have to be encountered besides showing that it is not to be found in localities where yellow fever is unknown.—I am, my dear doctor, yours very faithfully,

"'CARLOS FINLAY.

"'Dr G. M. Sternberg, U.S. Army, Havana.'

"Finally, I may say that this 'tetragenus' is comparatively large, and conspicuous by reason of its grouping in tetrads, and that it is promptly stained by the aniline colours. It should therefore be found in my sections of the various organs if present in the blood of yellow fever patients. It has not been found in the numerous sections made from forty cases in which I have made autopsies in Havana, unless possibly the cocci found in a single case in sections from the kidney (Case 10, 1888) are identical with Dr Finlay's tetragenus."

The fact that Dr Finlay's recent experiments show that when a certain amount of a pure culture is injected into young rabbits the animals usually die, cannot be accepted as giving material support to his claim that this is the specific yellow fever germ. A great number of saprophytic micro-organisms kill young rabbits when injected into the peritoneal cavity or beneath the skin in the quantity used in Dr Finlay's experiments—4 to 10 c. c.—Very sincerely yours, GEO. M. STERNBERG.

Dr Santos Fernandez,
Editor of the *Cronica Medico-Quirugica*, Havana, Cuba.

Part First.

ORIGINAL COMMUNICATIONS.

I.—SYPHILIS FROM AN INSURANCE POINT OF VIEW.

By P. H. Maclaren, M.D., Medical Officer of the Caledonian Insurance Company; *V.P.*R.C.S. Ed.; Surgeon, Royal Infirmary, Edinburgh.

As many important issues, hygienic, economic, and social, are involved in the manner in which syphilis is regarded, it is incumbent on medical men to form definite opinions on this subject, and be able to impress them upon those who are called on to decide questions relating to the health, insurance, or social relations of individuals affected by this disease.

On the first and last of these points medical opinion is tolerably clear and well-defined, but when the question of life assurance associated with a syphilitic history comes up for consideration, there is often displayed such a variety and vagueness of opinion that injustice is often done, and loss inflicted both on the companies and the individual whose life has been proposed for insurance. Directors may not be sufficiently definitely informed regarding the condition and prospective health of an applicant, but they are also apt to take up a prejudiced view for or against these cases, and render the harmonious action of the different offices an impossibility.

If after a careful and extensive survey of the natural history of syphilis a distinct classification could be made, the problem of life assurance would be greatly simplified, to the mutual benefit of the assurers and insured. Statistical investigation does not offer much assistance in establishing a proper estimate of this question, inasmuch as in the Mortality Returns other ailments are mixed up with syphilis, and deaths due doubtless to this cause are placed under other categories.

The knowledge which can guide us in framing such a classification must be clinical, and extend over a sufficient number of persons and years to make the conclusions reliable.

The following statements are put in the simplest language, in order that laymen may understand the ground on which certain definite classifications are made; and if these are generally approved of by the medical profession, lives in which syphilis has been an episode may be considered from the insurance aspect, with the prospect of being treated with some degree of method and greater justice than has hitherto been the case.

Syphilis in the acquired form is an infectious disease, which may be likened to a slow fever running its course in about two years and tending, in the great majority of cases, to spontaneous cure, whether treated or not. During this stage, in upwards of 1000 cases I have only had one fatal case, in a man who acquired syphilis when upwards of 60 years of age,—a singularly exceptional experience.

In the minority of cases in whom the more malign effects of syphilis present themselves, this development is apparently due to several causes, viz., no modifying treatment in the active stages of the malady, very early or advanced life, tubercular or gouty constitution, and especially alcoholic habits.

Science has as yet discovered no antidote to syphilis, but partly by empirical and rational treatment all the symptoms may be controlled and minimized; and if continuously carried out during the normal duration of the disease, no tertiary ailments (in which the dangers of syphilis reside) are likely to occur.

Syphilis is an ailment which revels in exceptions; but, as a rule, I believe if a man having acquired syphilis is to suffer from the tertiary manifestations, he will exhibit the signs and symptoms of this form of the malady within four years of the normal termination of the disease,—*i.e.*, six years after infection. After these preliminary statements, and without reference to general mortality statistics, from which it is difficult to obtain accurate information, I would be inclined to classify for insurance purposes all syphilitics under the three following groups:—

1. If a man has been properly treated, the probabilities are that, provided he is of good constitution and habits, no complications will arise, and the expectation would be that he will go through life with scarcely more appreciable risk than one who has never had the disease.

2. If proposer has not undergone a sufficient course of treatment, and applies for insurance before the expiry of six years, and yet is not suffering from any tertiary manifestations, and is otherwise satisfactory, the chances are that he may escape the malign form, but a 10 per cent. extra should be charged until the expiry of the six years, and then reconsider the case.

3. When tertiary symptoms have developed, the proposal should be absolutely declined, because, while treatment may temporarily remove these, it cannot eradicate the tendency to recurrence; and clinical observation has shown that those so affected rarely live beyond a term of ten years, and often much less where palliative treatment is wanting.

While my personal experience is almost absolutely favourable regarding the prognosis of the cases included in Class 1, it is questionable when the cases are looked at, with the interests of the offices perfectly safeguarded, if they should not practically be treated in the same way as those in Class 2.

The chief points to be aimed at for the benefit of all concerned are unanimity of opinion and of action.

II.—CURETTAGE OF THE UTERUS: HISTORY, INDICATIONS, AND TECHNIQUE.

By J. W. Ballantyne, M.D., F.R.C.P.E., F.R.S.E.

(*Read before the Obstetrical Society of Edinburgh, 8th January* 1896.)

It is now eighteen years since Dr James Carmichael communicated to this Society a paper by Dr Paul F. Mundé of New York on "The Dull Wire Curette in Gynecological Practice," and this paper was immediately followed by, and was, indeed, the direct cause of, one from the pen of the late Dr Keiller, on "Curettes and Curetting." Since that time no further communications on uterine curettage have been made to the Society; in fact, the matter has only been referred to incidentally in two or three papers devoted to other subjects. Yet there can be no doubt that in the eyes of the profession this operation occupies a very different position now from what it did nearly twenty years ago. The prophetic words of Dr Keiller have been largely fulfilled, for he said (in the communication above referred to) that he was "strongly impressed with the idea that curettes and curetting would become so fashionable amongst us that there might be a rushing after them;" but let us hope that the latter part of his prediction has not and never will come true, for he went on to say, "and that the already sorely-tried and long-suffering uterus might thereby be the reverse of improved."

It has, therefore, seemed to me that it may be both opportune and profitable for the Fellows of the Society now to record their estimate of the value of uterine curettage, and their views as to the kind of case most likely to be benefited by its performance. In order to further this end I shall give in the following pages a brief account of the history of the operation, along with a statement of the pelvic conditions in which it appears to be most clearly indicated, illustrated by instances occurring under my charge. I shall also describe the method of using the curette which has seemed to me the most convenient and the safest.

[Dr Ballantyne then passed in review the literature of curetting, and traced the gradual acceptance of the operation by the profession, and its extension in the treatment of conditions other than those for which it was first introduced. Allusion was also made to the histological researches of Bossi and Werth.]

INDICATIONS.

It has doubtless been gathered from what has been said of the history of the curette, that the indications for the employment of this implement have greatly increased during the last few years. It is now more frequently used than it was some time back, and it is used in cases in which it would previously have been regarded as inappropriate and even as dangerous. These indications may be roughly divided into therapeutic and diagnostic, and under each of these headings are grouped conditions, obstetrical as well as gynecological, which call for the use of the curette.

Indications.

- A. Therapeutic Uses.
    - I. Hæmorrhage.
        - *a.* Uterine.
            - 1. Corporeal.
                - α. Retained products of conception.
                - β. Non-septic Endometritis.
                - γ. Fibro-myomata.
                - δ. Sarcomata and Carcinomata.
            - 2. Cervical.
        - *b.* Vaginal.
            - Carcinoma and Epithelioma.
    - II. Septic and Infected States.
        - *a.* Uterine.
            - 1. Acute Endometritis.
                - Septic or gonorrhœal.
            - 2. Chronic Endometritis.
        - *b.* Annexial.
            - Pyosalpinx, etc.
    - III. Dysmenorrhœa and Sterility.
    - IV. Induction of Abortion.
    - V. Preliminary to other Gynecological Operations.
    - VI. Chronic Cystitis.
- B. Diagnostic Uses.

A. THERAPEUTIC USES.

I. IN HÆMORRHAGE FROM THE GENITAL ORGANS.—Hæmorrhage is one of the classical indications for the use of the curette; it is also the one about which there is the least difference of opinion. The bleeding may be uterine or vaginal in origin, and in the former case it may come from the body or from the cervix.

a. Uterine Hæmorrhage (Menorrhagia and Metrorrhagia).

1. Bleeding from the *body of the uterus* may be due, *first*, to retained products of conception; *second*, to endometritis without septic infection, but often with subinvolution and displacement; *third*, to fibro-myomata; and, *fourth*, to malignant uterine growths. Let us look at these various conditions as indications for uterine curettage.

α. *Retained Products of Conception.*—Very frequently after an abortion, and especially after one which has not been under the care of a medical practitioner, a portion of the decidual or fœtal membranes is left behind *in utero.* The derelict tissue need not be large in size to cause bleeding; in fact, an apparently insignificant portion may suffice to set up and maintain excessive hæmorrhage. There may be no signs of infective processes in the uterus, indeed, I am dealing now with the cases in which these are absent; yet the uterine bleeding will continue, the patient's strength will become exhausted and her health vitiated, and a morbid uterine mucous membrane will be developed unless the uterus is promptly relieved of its offending contents. In cases in which the abortion is a recent matter it will often be found that the cervical canal is still sufficiently open to admit the finger, and the uterus may be easily and effectively cleared out under chloroform. In such an emergency the finger is the best curette, it being always borne in mind that as strict antiseptic precautions must be taken as if the curette itself were being used. I am not, therefore, an advocate for the management of all cases of abortion with the curette; but in cases of habitual abortion, in which there is reason to believe that an unhealthy uterine mucosa is the cause, it is distinctly indicated. In the instance, however, in which several days or some weeks have elapsed since the abortion occurred, preliminary dilatation of the cervix will be needed, and something more thorough than a mere digital scraping of the uterine interior must be done, for by this time the decidual fragment has probably become firmly attached, and a new and doubtless an abnormally vascular uterine mucosa has been or is being formed. Such is a suitable case for curetting, and in illustration the following instance may be cited.

Illustrative Case.

Case of Mrs A. Retained Products of Conception: Curettage.—Mrs A., a recently married woman, 25 years of age, aborted at the third month of her first pregnancy (March 23, 1895). Considerable hæmorrhage occurred, and the ovum was expelled in fragments. Some bleeding continued till the 4th of April; thereafter the patient seemed well till the 13th of the same month, when, after a good deal of walking, hæmorrhage recurred in a rather alarming gush. This continued to occur at intervals of a few days, and I was consulted about the case on April 30. It was evidently a case of retained products of conception without (for the present) any signs of sepsis, so I curetted the uterus on May 1. The patient was anæsthetised, and the cervical canal dilated with Hegar's cones in the usual way. Some fragments of decidual membrane were brought away with the curette; the interior of the uterus was washed out and then cauterised with iodised phenol; and an intra-uterine plug of iodoform gauze was inserted. No further hæmorrhage took place, and the patient made a good recovery. She had a very profuse discharge at her next menstrual period, which gave her some alarm. This is a phenomenon which is not infrequently met with after curettage; I do not pretend to explain it. All the succeeding periods have been perfectly normal.

β. *Non-septic Endometritis.*—It was for the purpose of removing from the uterine cavity what were known as fungosities that Récamier originally introduced the curette, and in meeting this indication the instrument may, at the present day, be said fully to maintain its reputation. It is now recognised that these fungosities are associated with and dependent upon chronic endometritis, —that they are, in fact, the hypertrophied uterine mucosa, and that the organ in which they are found is commonly displaced, and is nearly always in a state of subinvolution. The condition is frequently met with; it may originally have been set up by a labour or a miscarriage, or it may have taken origin in any of the ways that chronic endometritis does; it may persist for a long time, showing usually a steady tendency to increased severity in its manifestations; it brings with it menorrhagia, metrorrhagia, leucorrhœa, sacralgia, anæmia, and general depreciation in health, and it entails sterility; the uterus is large (sound passes in from 3 to 4½ inches), tender, and often displaced; and the morbid state shows no natural tendency to cure, but rapidly becomes normal after the cavity of the organ has been thoroughly curetted and cauterised. The following case may be cited as a type of this use of the curette.

Illustrative Case.

Mrs B., aged 32 years, came to me for advice in the early part of January 1895. She was married, and had three children, of whom the youngest, a boy, was 8 years old. She had been in bad health ever since the birth of this child eight years ago, and had recently been getting worse. She complained of excessive menstrual loss, the discharge lasting for fully seven days; recently the periods had been occurring every three weeks. There was no acute pain at the monthly epoch, but rather a dragging sensation in the pelvis, which lasted for a week after the flow had ceased. There was a good deal of leucorrhœa in the intermenstrual period. Recently she had been showing signs of anæmia—breathlessness, palpitation, etc.—had to a large extent lost her appetite, and had developed troublesome constipation.

Physical examination showed that the lungs and kidneys were sound; there were anæmic bruits to be heard over the base of the heart, but no signs of organic disease; and there were all the manifestations of a chronic dyspepsia. The vaginal and bimanual examination revealed a large, slightly sensitive, freely movable uterus, situated rather low down in the pelvis, but not otherwise out of position. The uterine sound entered to a distance of 3¾ inches, its passage gave a little pain, and its tip was seen to be blood-stained when it was withdrawn. With the sound in position it could be felt that the uterine walls were thicker than normal.

The uterine appendages showed no signs of disease, neither was there sharp pain on pressure in the lateral parts of the pelvis. Perineum was intact.

The diagnosis of hyperplastic endometritis of a chronic kind was made, and it was concluded that the morbid process had begun eight years previously in the puerperium following the birth of the youngest child. At any rate she had then been kept in bed for several weeks by her medical attendant for "inflammation." There was no sign of annexial disease, and the case was therefore evidently a most suitable one for curettage. (Medicinal means and vaginal douching had been tried without effect.) A sharp attack of influenza caused the postponement of the operation till April 8, when it was performed on the day following the cessation of the menstrual flow. The preparations for the curetting were the usual ones, and the operation itself had no feature of special interest. The scraping removed a thickened and vascular mucosa; iodised phenol was applied to the emptied cavity; and an intra-uterine packing of iodoform gauze was inserted, which was removed three days later. There was some pain in the back for twenty-four hours, but after that recovery was uninterrupted, and the patient was able to go to the country for a change in a little more than a fortnight. Her menstrual flow came on in May, lasted only three days, with a slight return on the sixth day from over-exertion, and was moderate in quantity. "The first time she had had a natural period for seven or eight years" was what she told me. Since then she has been in the enjoyment of perfect health, although she has not again become pregnant. The uterus is now of normal size, and occupies a healthy position in the pelvis.

Even in cases in which the endometrium does not show the polypose growths which are so characteristic of this type of chronic inflammation, curettage is still indicated if the symptoms which call for it (viz., hæmorrhage, leucorrhœa, backache, etc.) are present in sufficient severity. Of course, it is practically impossible to separate these from what are called the "chronic infected cases," in which an old septic or gonorrhœal infection has been the *origo mali*, but in which the virulence of the process has passed off. The separation is, however, unnecessary, as the same treatment may be meted out to both.

γ. *Uterine Fibromyomata.*—There is at present no very strong feeling in favour of the use of the curette in uterine fibroids. In certain cases the uterine mucosa has been found in a hyperplastic state, and has even shown fungosities when myomata were present; but the observations of Oscar Semb ("Ueber das Verhalten der Uterusschleimhaut bei Myomen," *Arch. f. Gynæk.*, xliii. p. 200, 1893) have shown that in most instances the hæmorrhage is due to hypertrophy and congestion of the muscular rather than of the mucous coat; indeed, in some cases there was actually an atrophic endometritis. When the curette is employed it is difficult to see how it can effect more than a temporary benefit, and if the endometrium be atrophic it will not even act as a palliative. A few cases are on record in which involution followed curettage, but in them there was no myoma. Nevertheless, Orloff (128),[1] working in Professor Lebedeff's Clinic, has found good results in ten cases in which the uterus was curetted for myomata of the interstitial type. In all the instances, save one, the tumour was single, and in all the leading symptom was hæmorrhage, not pain. Tincture of iodine was applied to the interior of the uterus after curetting. The results were diminution in the size of the tumour, decrease in the length of the uterus, disappearance of the metrorrhagia, and a return of the regular menses during a period varying from six months to one year. Orloff was of opinion that curettage was indicated when the patient was too weak from blood loss to undergo a major operation, or when she was not far from the climacteric; it might also be of service as a preliminary to further surgical interference. Whether or not curettage may act as a valuable palliative in some classes of uterine myomata is not yet certain; but it is obvious that it is not applicable in all.

δ. Uterine Sarcomata and Carcinomata.—Apart from its use as a diagnostic means in malignant growths of the corpus uteri, the curette is here of little value. The only treatment that presents a fair chance of success is hysterectomy, preferably per vaginam, performed early. If it be too late to hope for any success from extirpation of the uterus, then the patient's sufferings and misery may be lessened by curettage of the organ, followed by free cauterisation. In cases of sarcoma uteri where this has been done I have seen the patient's state greatly improved; but, of course, the relief was quite transient, and it was scarcely possible to think that life was prolonged.

2. Bleeding from the *cervix uteri* is an occasional indication for the sharp spoon; the condition calling for it is nearly always cancer, and what has been said regarding its use in sarcoma of the body of the organ may be repeated here. The curettage is at best a palliative, although it has been known to be followed by a respite of even two or three years; but it is worth doing if it only serves to diminish the hæmorrhage, and to stop for a time the systemic infection from the breaking-down of cervical tissues. A curette with serrated edges has been specially recommended for this purpose; great care must be taken not to invade neighbouring organs, and the scraping should be followed by free application of the Paquelin cautery at a dull red heat.

b. Vaginal Hæmorrhage.—Vaginal carcinoma and epithelioma, secondary or very rarely primary in character, may, on account of hæmorrhage and other discharges, call for the use of the curette; but this instrument must be employed with the greatest caution, and, of course, it is with a view to palliation only that it is recommended.

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[1] The figures within parentheses refer to the bibliography, which will appear at the end of the paper when published in the *Obstetrical Society's Transactions.*

II.—IN SEPTIC AND OTHER INFECTED CONDITIONS OF THE GENITAL ORGANS.—Nearly all the text-books of gynecology which are more than half a dozen years old, and not a few of the much more recent ones, place sepsis as a danger resulting from and not as an indication calling for the use of the uterine curette. In fact, it is barely two years since Berry Hart, in a fresh and eminently suggestive paper on the classification of gynecological diseases, read before this Society, stated, in reference to chronic infected cases, that he had seen cellulitic thickenings disappear after curetting. Hart then went on to say: "This heresy, as one may almost call it, is truth, I believe; but it is strong meat, and liable to be abused by the inexperienced." It can scarcely be called heterodox now, and if it be strong meat, still there can be no doubt it is a pabulum eagerly sought after, and assimilated more or less perfectly by even the tyro. A glance over the titles of articles in medical journals all over the world demonstrates this fully.

Now, the change in the views of the profession has not come about through want of appreciation of the danger of sepsis entailed by the use of the curette. Not at all. We still regard the curettage of the uterus as an operation not free of risk, but we take care to minimise its dangers by strict antisepsis; we no longer perform it in our consulting-rooms; and we hedge its performance round with the greatest care and forethought. What has happened is this. We have gradually come to learn that nearly all, if not all, the septic and infected conditions of the genital organs spring from micro-organismal infection of the endometrium, either primarily, or secondarily from vaginal infection. The streptococcus or the gonococcus obtains a lodgment in the uterus, and endometritis is set up; sooner or later, and more commonly soon than late, the infection spreads to the tubes, and having reached them it does not take long to pass through their fimbriated extremities into the peritoneal cavity; virulent peritonitis and, secondarily, suppurative cellulitis are thus set up. All these processes—septic or specific endometritis, salpingitis, pyosalpinx, ovarian abscess, peritonitis, and cellulitis—are simply links in a chain of pathological results. If we can prevent the forging of the utero-tubal link we stop the formation of the chain effectually. This I believe we can do; I have seen it done; I have done it myself both in acute and chronic sepsis.

In a discussion (118) on curetting the puerperal uterus, in the Chicago Gynecological Society, Dr Charles Warrington Earle said: "I believe that curetting a uterus after delivery at full term involves more responsibility than an ordinary and uncomplicated laparotomy." So it does. I agree with Dr Earle; *but* when I prepare to curette the puerperal uterus I am face to face with dangers to life infinitely more pressing than those that meet the man who is about to perform "an ordinary and uncomplicated laparotomy." Such a laparotomy is undertaken commonly for conditions which would not immediately terminate fatally, whilst the occasion of the curettage is a puerperal septicæmia, and everyone knows that that means, in the vast majority of cases, either immediate death or lifelong misery from pelvic abscesses, adhesions, and chronic invalidism.

Under the head of septic and infected states there are several separate groups of conditions in which curetting may be employed. With regard to some of these there is still some doubt in the mind of the profession as to the justifiability of the operation; possibly some medical men would consider it as contraindicated in them all.

a. Uterine infected states (Endometritis septica, etc.).—Of the uterine infected states which may require curettage, should other and milder measures fail, the most important is undoubtedly septic endometritis, acute or chronic.

1. *Acute.*—Most commonly acute septic endometritis is due to infection after abortion; it may also be post-operative, and be caused by neglect of antiseptic precautions in minor gynecological operations. There is a rigor, a high temperature, rapid pulse, pain over the uterus, and a purulent discharge from the cervix. Curettage is here indicated, and I believe the indication holds even if the Fallopian tubes have become involved. It ought to be thorough, and it should be followed by a complete packing of the uterus with iodoform gauze. Further, great care should be taken when the dressing is renewed, for the risk of reinfection is large. Septic infection may also follow labour at the full term, especially if there has been hæmorrhage, retention of a fragment of placenta or membranes, or a pre-existing state of unilateral pyosalpinx. Should one curette such a puerperal uterus? I believe one should if an intra-uterine douche, followed by iodoform gauze packing, fail to bring down the temperature. The following case will serve as a type of this group of indications.

Illustrative Case.

Mrs C., aged 30 years, v.-para, was confined on the morning of December 14, 1895. Her first child had been delivered stillborn with instruments; her second had also required forceps, but was still living. She has twice aborted. During this (her fifth) pregnancy she had been troubled with a vaginal discharge,—in fact, she has had this since before her marriage. Dr John Stevens, her medical attendant, reported that in the labour the head presented in the R.O.P. position; rotation occurred naturally, and the child was born alive without forceps. There was a severe hæmorrhage in the third stage, and the patient was much collapsed. She fainted and was unconscious for about an hour, but was revived by stimulants and ether hypodermically. The placenta and membranes seemed intact, but, naturally, they had to be removed very quickly from the uterus on account of the hæmorrhage. This was on the morning of December 14; in the evening the temperature was 102°·6, and the pulse 130. On the morning of the 15th the temperature was normal, and the pulse 96; in the evening, however, it was 103°·4, and later 104°·5, whilst the pulse was 104 and 124. She got a vaginal douche. Next day (16th) the morning temperature was 98°·4, and the pulse 89; but again in the afternoon it rose to 103°·6, and the pulse to 118. She was douched thrice. On the fourth day of the puerperium (December 17) the morning temperature was 104° (pulse, 107); at 2 P.M. it was 103°·5, and an intra-uterine douche was given; at 8 P.M. it was 103°·8, and the patient was much exhausted. At this time Dr Stevens asked me to see the case with him. I found the patient very weak, with a temperature of 104°, and a pulse of 125; there was great tenderness over the uterus; there was scarcely any lochial discharge, but what came away was distinctly offensive. The vagina was hot and dry, and the uterus was very painful to touch. There was no cause for the high temperature in the lungs or breasts, and the diagnosis of acute septic infection from the uterus was made. After consultation we determined to try the affect of curetting, although the weak state of the patient did not hold out much promise of success. So at 11 P.M. she was anæsthetised and the external genitals and vagina thoroughly cleansed. One or two of the larger sizes of Hegar's dilators were introduced into the uterus, and I then passed in my finger, but could feel no pieces of membrane or placenta. Since, however, my finger failed to reach the fundus,—and I may here interpolate that the cervix was fixed and could not be dragged down in the vagina,—I now introduced the sharp curette (Récamier's), and succeeded in bringing away from one of the upper angles of the uterus a few shreds of particularly malodorous membranes. The uterine cavity was then thoroughly douched out (perchloride of mercury 1 to 5000) and packed with iodoform gauze. The vagina was also packed. The patient stood the chloroform well, but was a little faint after the curetting. She, however, stated that she felt easier. The temperature at midnight was 101°, and the pulse 95, and affairs remained in very much this condition till next morning, when the thermometer registered 101°·8, and the pulse-rate was 93. Respirations were 30. In the afternoon (December 18) I saw her again with Dr Stevens. The temperature, which at 2 P.M. had been 104°·8, was down again at 5 P.M. to 102°·8. The iodoform plug had been renewed, and a vaginal douche given. The urine had to be drawn off with the catheter. There was intense vaginal tenderness, but less abdominal pain. The breasts were giving rise to some trouble, so they were bandaged, and belladonna ointment was applied. A teaspoonful of the sulphate of magnesia was given every hour till the bowels had moved freely some five or six times; but there was still a large amount of abdominal flatulence and some tympanitis.

It would be tedious to state in detail the events of the next five or six days. The packing was changed twice daily, and always came away soaked in purulent discharge; the urine had always to be drawn off; and the temperature varied in an erratic way from 103° to 100°·5, falling on December 22 (ninth day of puerperium) to 99°·9, rising again to 104° the same evening, and for the first time touching normal on December 24, when, also, the pulse was 71 and the respirations 24. A gradual improvement in the abdominal condition took place, the appetite improved as the tongue slowly cleaned, and on December 23 the patient began to be more hopeful about herself. About this date also the discharge ceased to be offensive, and douching was stopped. On the evening of the 24th, however, the temperature suddenly shot up to 104°·8, and there was some pain in the left hand and wrist; the bowels had not moved all day. This was only a temporary relapse, and since the 25th the temperature, pulse, and respirations have been normal, and the patient has been able to pass water. She is now (January 7) apparently quite convalescent; but a vaginal and bimanual examination reveals the thickening in the left broad ligament and the fixing of the cervix which have been present throughout the whole illness, and which were probably there before she became pregnant.

I am well aware that the line of treatment followed in the preceding case may be open to objections. Dumont (140) and many others have recently insisted strongly on the many dangers in connexion with the curettage of the puerperal uterus from perforation of the softened uterine wall, from the lighting up of slumbering annexial lesions, etc.; but in the case above recorded we were face to face with a condition already so grave that of the two kinds of treatment which were still untried, abdominal section and curetting, we unhesitatingly adopted the latter. Certainly the pieces of membrane could not have been removed in any way but by the curette.

What has been said regarding acute septic endometritis applies also to gonorrhœal endometritis, although it is true that systemic infection is not so severe in this type. The gonococci, however, soon invade the tubal mucosa and set up salpingitis and all the ills that follow in its wake, and, therefore, curettage is indicated, with all the more hope of success for the reasons that the micro-organisms are commonly found in the superficial layers of the uterine mucous membrane, and that further invasion takes place through the tubes and not the lymphatics.

(*To be continued.*)

III.—ON THE IRREGULARITY SEEN IN SOME SPHYGMOGRAPHIC TRACINGS.

By W. G. Aitchison Robertson, M.D., D.Sc., F.R.C.P.E., F.R.S.E.

In sphygmographic tracings one often sees a more or less marked irregularity in the length of the pulse waves. This is frequently regarded as due to varying degrees of cardiac irregularity. It struck me that the fault might be quite as often in the recording apparatus as in the heart. I had often noted the fact that a pulse which to the finger seemed perfectly regular gave a sphygmogram showing irregularity. This seemed to require some explanation, as we know that the tactile sensation is, of all our senses, least liable to deception; and especially here one would not readily distrust it, seeing that we rely on it so much for information regarding the vascular system.

To obtain tracings comparable with one another it is necessary that the conditions should be as nearly as possible similar in each observation. Thus we select corresponding localities for the application of the instrument. We vary the pressure of application as little as possible, and always use the greatest amplitude of movement of the lever.

It is assumed that the mechanism of the instrument causes equal lengths of the smoked paper to travel at equal velocities, and that the rate of this movement is the same in different instruments.

It is to this assumption that I would specially direct attention, because it is in many cases unreliable. When we purchase a watch or clock, we do not take it for granted that it will go regularly. We compare it with other timekeepers and regulate it, so that in time we may get it to keep time perfectly. This is readily accomplished in the case of a timekeeper, because it possesses what is termed a "compensated movement," or one by which its rate of movement is kept uniform.

If we look at a watch we find that the prime mover is a coiled spring which sets in motion a train of wheels. To correct the variations in the force of this spring and to equalise its power, the "fusee" or spiral cone is made use of. As the spring uncoils a fine chain is unwound from the fusee, and a uniform motion so obtained in the latter and in the train of wheels connected with it.

In a sphygmograph, however, the mechanism simply consists of a coiled spring which turns a series of three wheels, so geared that the velocity of each is lessened, and the paper thus made to travel slowly. There is no attempt at "compensation" in the instrument.

Does the paper travel at a uniform rate?

To determine this it is not sufficient merely to note how many seconds the paper takes to travel its entire length. In different instruments the paper may take the same amount of time to pass through, and yet the rate of motion may not have been uniform in any of them.

I estimated the rate of movement of each paper through its instrument by recording on it the vibrations of a tuning-fork.

In the first instance no attempt was made to take a pulse tracing on the same paper, as the experiments were conducted merely to estimate the uniformity of the rate of motion. The sphygmograph was held steady by being fixed in a clamp.

The instruments of Dudgeon and Marey were alone employed, as being those most frequently in use.

DUDGEON'S SPHYGMOGRAPHS.

D. Sphygmograph, No. 1.—When fully wound up it took 90 seconds to run down; but after running 60 seconds its movement became slower.

(1.) When fully wound up, the first tracing showed that the rate of movement was fairly uniform, but still there was a variation from 15½ to 17 double vibrations per 20 m. m. length (tuning-fork making 10 D.V. per second).
(2.) After running 15 seconds, there were from 18 to 19½ D.V. per 20 m. m. of paper.
(3.) After 30 secs., 19 to 21 D.V.
(4.) After 45 secs., 21 to 22½ D.V.
(5.) After 60 secs., 24 to 30 D.V.
(6.) After 75 secs., 27 to 52 D.V.

This experiment shows very well the gradual slowing down of the movement. Towards the end of the first minute the speed at which the paper moved was only about a half of what it was at the start. Up to the end of the first 45 seconds of its running the movement was fairly uniform.

D. Sphygmograph, No. 2.—When fully wound up it took 80 seconds to run down. At the start the D.V. per 20 m. m. varied from 19 to 24½.

After running 15 secs., 22 to 32 D.V. (Fig. 1.)

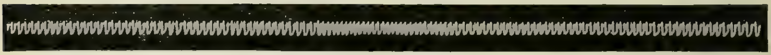

FIG. 1.

After 30 secs., 23 to 30 D.V. (Fig. 2).

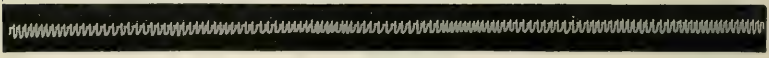

FIG. 2.

After 45 secs., 30 to 49 D.V.
After 60 secs., 44 to 70 D.V.

In this instrument the speed of movement ran down sooner and was much more irregular than in the preceding case. When fully wound up the first showed a variation of 1½ vibrations only per 20 m. m.; while in the second instrument the variation amounted to 5, and after running for 15 seconds this had increased to 10.

D. Sphygmograph, No. 3.—When fully wound up it ran for 70 seconds. At the start there were 15 to 28 D.V. per 20 m. m. of paper (Fig. 3).

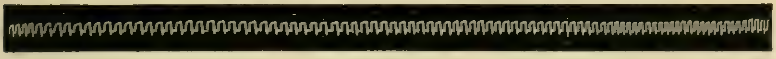

FIG. 3.

After running for 15 secs., 15½ to 24 D.V.
After running for 30 secs., 17 to 19 D.V.
After running for 45 secs., 20 to 30 D.V.
After running for 60 secs., 29 to 60 D.V.

This is an extreme example of an irregularly-running instrument. After running 30 secs., though slower, the motion was more uniform than it was when fully wound up. After this period, however, the irregularity was extreme.

D. Sphygmograph, No. 4.—When fully wound up it ran for 105 seconds.

At the start there were 18 to 19½ D.V. per 20 m. m.;
After running 15 secs., 21 to 31 D.V.;
After running 30 secs., 22½ to 24 D.V.;
After running 45 secs., 22 to 24 D.V.;
After running 60 secs., 25 to 32 D.V.;
After running 90 secs., the power was too feeble to push on the paper. On keeping winding up the instrument at this stage, while the paper was moving, there were 13 to 14 D.V. per 20 m. m.

MAREY'S SPHYGMOGRAPHS.

M. Sphygmograph, No. 1.—When fully wound up it ran for 7 seconds.

At the start there were 12½ to 15 D.V. per 20 m. m.
After running for 3 secs., 16½ to 23 D.V.;
After running for 4½ secs., 15½ to 19 D.V.;
After running for 5 secs., 15 to 17 D.V.

M. Sphygmograph, No. 2.—At the start 14½ to 20 D.V. per 20 m. m.

Tracing taken immediately after the first without any further winding up, 16 to 18 D.V. per 20 m. m.

A third tracing taken after the second without winding up, 18½ to 21 D.V.

M. Sphygmograph, No. 3.—Fully wound up, 18½ to 24 D.V. per 20 m. m.

Second tracing taken after preceding with the same winding, 28 to 43 D.V.

The paper did not run its full length because the driving spring had become enfeebled.

M. Sphygmograph, No. 4.—Fully wound up, 24 to 29 D.V. per 20 m.m.

The behaviour of these instruments (all of them had been in use for some time, and some were in daily use) shows very conclusively that the mechanism causes the paper to travel at very irregular rates past the writing style. *What is the effect of this irregularity on the pulse tracing?*

The two tracings figured below were taken with a sphygmograph of Dudgeon, and exhibit clearly the effect of the mechanical irregularity. To show the inequality in the length of the pulse waves the chronograph was made to record its vibrations on the same tracing after it had been taken. The number of double vibrations during each pulse-wave is marked below.

The first sphygmogram shows that the paper must have been moving tolerably rapidly, at an average speed equal to 17 D.V. per 20 m.m. The lengths of the pulse-wave vary from 7 to 13 vibrations, thus giving the pulse an irregular character.

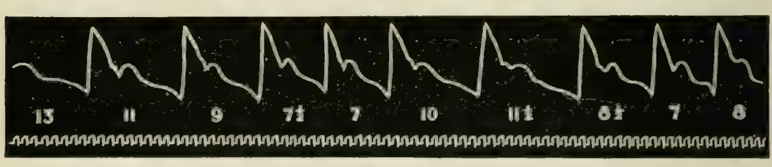

FIG. 4.

In the second tracing the paper had been moving at a much slower rate and irregularly. The pulse waves vary in length from 6 to 10 D.V. The tracing would suggest that the pulse was rapid and somewhat irregular. The pulse itself, however, was regular and did not vary, and both tracings were taken one after the other from the same individual.

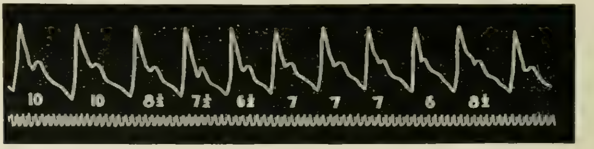

FIG. 5.

These two examples suffice to show that the paper was *not* moved at a uniform rate by the mechanism.

These experiments demonstrate that the movement of the machinery becomes gradually slower as the spring uncoils and becomes less able to do work. The velocity is, as a rule, greatest when the spring is fully wound up. Successive tracings which are taken will therefore differ much from one another. The acuteness of the up-strokes and down-strokes in the tracing depends entirely on the velocity of the paper. The two subjoined tracings exhibit these differences. The first (Fig. 6) was made to travel at a uniform rate of 1 inch in 10 seconds,

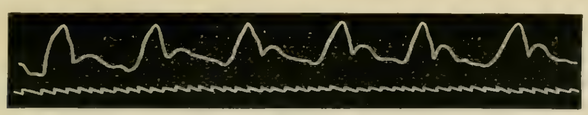

FIG. 6.

while the second (Fig. 7) moved at the rate of 1 inch in 7 seconds. The chronographic vibrations are marked below each tracing.

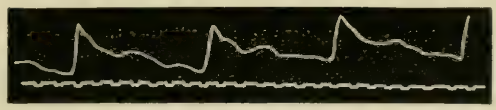

FIG. 7.

Each instrument should, therefore, be carefully tested in order to know at what velocity the paper is moved. This is easily done by causing a tuning-fork to record vibrations on the paper as indicated above. If the velocity does not vary in the same instrument, then it can be marked definitely that the paper travels over x inches in y seconds.

$$\therefore \text{ velocity} = \frac{x}{y}$$

More probably, however, the velocity will only remain uniform for the first 30 or 40 seconds, and so this formula will only hold good up to the end of this time limit.

The rate of motion imparted to the paper is approximately the same in the instruments of Marey and Dudgeon. If they differ, however, we can reduce them to the same equivalents by knowing the rate of motion in each sphygmograph. This is of great importance, for, if the same pulse be recorded on rapidly running paper the pulse appears soft and slow; while if it be moving slowly the pulse appears rapid and bounding.

The following sphygmograms, taken while the paper was moved at various but uniform velocities, illustrate this. (It is needless to state how the uniform rate of motion was obtained.)

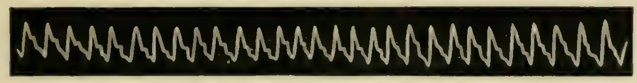

FIG. 8.—Paper moving at rate of $\frac{1}{10}$th inch per second.

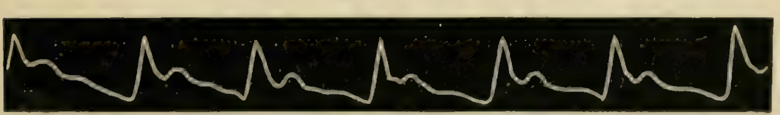

FIG. 9.—Moving at rate of $\frac{1}{4}$ inch per second.

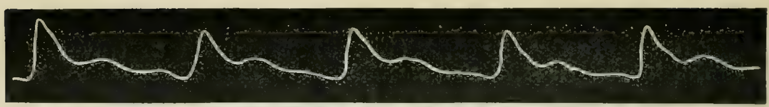

FIG. 10.—Moving at rate of ½ inch per second.

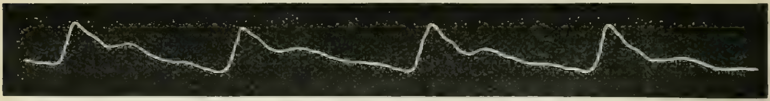

FIG. 11.—Moving at rate of 1 inch per second.

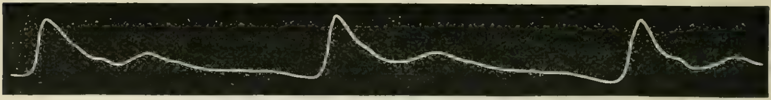

FIG. 12.—Moving at rate of 2 inches per second.

FIG. 13.—Moving at rate of 3 inches per second.

These are, of course, exaggerations of what is seen in sphygmographic tracings, but they show the effects produced by varying the velocity of the moving paper.

To obtain uniformity in sphygmograms it would be necessary to have all instruments so constituted that the paper would be moved in each at the same rate; or, alternatively, that each should be marked with the rate of velocity of its own movement, and this can be easily and accurately done in the manner shown. The other ordinary precautions must likewise be attended to, as—

(1.) Always apply the instrument to the same spot on the radial artery, preferably a little to the ulnar side of the styloid process of the radius and half an inch above it.

(2.) Exercise no undue pressure on the artery.

(3.) Always see that the writing style is moving at its greatest amplitude before taking a tracing.

(4.) Always begin a tracing with the clockwork fully wound up. Never take two in succession without winding the instrument fully up.

It is only after such precautions that tracings taken at different times and by different instruments can be compared.

At best, however, sphygmographs are untrustworthy, and for careful clinical examination of the pulse a recording cylinder must be employed. In fact, the medical wards of each hospital should be provided with such an instrument for the investigation of the pulse, heart, etc., as it is indispensable for the elucidation of many clinical phenomena. In making tracings of the pulse the style of the sphygmograph is made to write on the revolving cylinder and the chronograph applied below it. In this way a perfect, continuous, and timed record is obtained, and irregularities in rhythm or volume of the pulse are clearly seen,—points which are often misinterpreted in the ordinary sphygmographic tracing which has only made the record for a few seconds.

I have to thank Professor Rutherford cordially for the use of his laboratory and instruments in performing these experiments.

IV.—THE TREATMENT OF BILIARY COLIC BY OLIVE OIL.

By W. F. Macarthur, M.B. Edin.

On January 6th I was sent for to see a servant at a farm-house who had gone with the milk-cart in the morning, and on his way home had been seized suddenly with violent pains in the abdomen. On arriving I found the pain was referred to the region of the gall-bladder, from which it radiated in various directions. It was paroxysmal in character. He could not stand the slightest touch on any part of the abdomen. There was no rise of temperature, or vomiting. On questioning him, I gathered that three months ago he had had a similar attack, from which he recovered in a couple of days. I gave him a hypodermic injection of morphine and atropine, and prescribed a mixture of morphia and belladonna, to be taken if the injection did not give relief, and the application of turpentine stupes.

Jan. 7.—The pain and abdominal tenderness about the same. He had not slept, and as his bowels had not been moved for four days, I ordered castor-oil, and to continue mixture.

Jan. 8.—There was no alleviation of his symptoms. He passed a clay-coloured motion. Jaundice was well marked.

As the pain was great, I gave him another hypodermic injection, and recollecting an interesting series of articles in the *British Medical Journal* in the spring and early summer of last year, "On the Treatment of Gall-Stones by Olive Oil," particularly one by Dr Brockbank of Manchester, who pointed out that cholesterine was soluble in olive oil at the temperature of the body, I decided to give it a trial, and so ordered an ounce to be taken every second hour.

Jan. 9.—He had not slept, but the pain was less severe, and did not come on in paroxysms, and the abdomen was less tender to touch. His bowels were moved twice; in the morning the motions were oily and clay-coloured. I advised him to continue oil, and to take a blue pill.

I did not see him till the 11th, when I was surprised to find him up and apparently well. He told me that the previous day he had a dark-coloured motion, and one or two severe attacks of pain after one of which he slept, and next morning found pain was gone. On pressing the abdomen there was no pain evinced.

During his illness there was no rise of temperature or sickness. The oil was easily taken, and did not cause any nausea.

V.—AN INQUIRY INTO THE PHYSIOLOGY OF THE ACTION OF THERMAL SALINE BATHS AND RESISTANCE EXERCISES IN THE TREATMENT OF CHRONIC HEART DISEASE (THE NAUHEIM AND SCHOTT SYSTEM).

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(*Read before the Medico-Chirurgical Society of Edinburgh*, 15*th January* 1896.)

This method of treating chronic heart disease, commonly called in this country "the Schott System," in recognition of its practical discoverers and exponents, was lately brought into prominence in England by Dr Bezly Thorne, and is now attracting much attention. It is claimed for it that it is applicable to an immense number of cases which hardly improve, if at all, under rest and ordinary cardiac tonics, and yet are not strong enough to be able to adopt the more vigorous measures of the Oertel System; that, in fact, it has discovered a path of safety intermediate between the Scylla of over-inaction and the Charybdis of over-exertion, which leads gradually and surely to the re-establishment of sound cardiac and bodily health; that its mildness renders it almost universally suitable; and that its beneficence and power, when employed by skilful hands, are capable of accomplishing results alike comforting, reassuring, and delightful to the patient and gratifying to the physician. If such claims can be substantiated, if they are found to rest upon a sure foundation, and if they are supported by sound physiological and clinical proof, they will most assuredly be welcomed by us with gladness. We have been taught by experience, however, to walk warily. We recall to mind that such sanguine views, amounting in many cases to exaggeration, are common to every new health-resort,—whether it be a spa more remarkable than all others for the unpleasantness of its waters; or an air cure, in which the credulous go barefooted upon the dewy grass or snowy pavements; or the whey cure, where they swill fermented milk to a perilous stage of repletion; or the grape cure, where they eat of the juicy fruit to a degree far beyond the dictates of commonsense or the laws of digestion; and all this too, be it remembered, under the specialist's direction. Health-resorts are as much subject to fashion as dress or music, or bicycling or serving a dinner, and the medical specialist is too apt to follow the prevailing craze of the time, and recommend the latest favourite spa. The fascination of trying a new remedy and the certainty of pleasing his patient tempt him, and he saves argument and his time, already perhaps overtaxed, by adopting what is often the obvious wish of his patient. A particular "Kurort" may thus gain a reputation far above its merits. There is a perfect library of literature on spas and other places, that possess in baths, waters, or climate those sovereign cures of which sooner or later the majority of mankind are in search. There is scarcely a disease from ennui to gout which has not its appropriate waters, saline and sulphurous, earthy and ferruginous, alkaline and acidulated, indifferent and uncharacterised; and the cautious and critical mind lends a very guarded ear to claims coming from sources so liable to exaggeration and over-pretension. Bad Nauheim claims to possess in its warm saline carbonated waters a sovereign remedy for chronic heart disease, and its praises are voiced by thousands of the laity and its claims supported by medical men of more or less eminence in nearly every country in Europe. There are the many writings of the two brothers Schott and of Bezly Thorne, and the papers of the two Broadbents, of Babcock, of Israel, of Moellier, of Groedel, of Saundby, and others, all testifying more or less strongly in their favour. They have, however, mainly devoted themselves to an account of the waters and the resistance exercises, their methods of use, their effects, their artificial reproduction at home, and the rationale of their action, on the assumption or conviction that the claims advanced are well founded. This seems to me to be neither satisfactory nor scientific; it is surely better to subject these claims themselves to criticism, and to test them in every way possible. Balneological methods in the past have largely erred in a want of exactness of technique and physiological grounds for their action. The first objection can hardly be urged against the Schott System, as the composition of the baths, their method of administration, the conditions under which they are to be taken, and the precautions to be adopted, have all been given with much care and precision by Dr Aug. Schott, and subsequent writers on the Continent and in this country have all adhered more or less closely to his views. The same may be said of the exercises. When we come, however, to study the physiological explanations of their action, we have hardly the same cause for satisfaction. The results of their action are grouped as follows:—

I. *Subjective Phenomena.*—1. A sensation of cold followed by warmth. The patient lies in the bath without movement, and the sensation of slight cold experienced on entering is soon replaced by one of gentle warmth, which lasts during the remainder of the bath. The same experience occurs, but to a slighter degree with each succeeding bath, so that the patient is able comfortably to bear a gradually diminishing temperature, until he reaches the coldest baths usually administered, viz., the carbonated natural springs, about 86° F. In these the gentle tingling, warm sensation all over the skin is particularly marked.

2. A sense of oppression in the chest. This gradually becomes

less marked after the patient has been some little time in the bath, and usually diminishes in subsequent baths until it may become hardly noticeable.

3. An increased power of sleep. It may become more regular, constant, and refreshing, and troublesome insomnia may even disappear.

4. Disappearance of unpleasant sensations. If the patient has formerly suffered from palpitation, cardiac pains, breathlessness, or headache, he frequently finds that they disappear. He is, further, conscious of an increased sense of wellbeing. He is lighter in spirits and fitter for work, and generally expresses himself as feeling much better.

II. *The Objective Phenomena.*—1. An increase in strength and diminution in rate of the pulse. The extent of the change varies in different cases. A diminution of six to ten beats in a minute is a fairly common average, and while the increase of strength is never great, it is easily appreciated by the fingers. Other changes are also occasionally observed,—*e.g.*, irregularities in strength and rhythm may be modified, and may even disappear.

2. Slight slowing of respiration. This usually occurs to the extent of two to three respirations per minute during the action of the remedial agent.

3. A diminution in size of the heart. This is the main apparent result, though inspection, palpation, and auscultation may also give evidence of an improved heart tone. Thus a systolic mitral or tricuspid murmur may disappear and a presystolic mitral reappear, or the cardiac sounds may improve and the apex-beat become more forcible; but all these changes occur to a slight degree only, and sink into comparative insignificance beside the great diminution which takes place in the area of deep percussion dulness in the cardiac region. The extent of this diminution varies in different cases, but ½ to ¾ of an inch all round is quite common, and in many cases it even amounts to 1 inch or more. It is held that this diminution of the area of cardiac dulness indicates a corresponding decrease in the size of the heart.

I have now made many observations upon the working of The System, having studied it carefully at Nauheim last summer along with my friend Dr Frederic Thorne of Leamington, and afterwards by means of the exercises and artificial baths at home. The number of cases already reported on by different writers as having benefited by the treatment is already very great: thus Bencke in 1872 gives 56; Aug. Schott, writing in 1885, gives over 300; and his brother, Theodore Schott, in 1894 gives about 4700; while Bezly Thorne and others have also added considerably to the number. I cannot claim to possess so lengthened a period of experience of the System as some of these writers, nor do I think it is necessary to enable the inquirer to test it thoroughly, or to judge of its merits or demerits with impartiality. My experience has enabled me to study several examples of different classes of cases, which may be conveniently grouped as follows:—

I. *Cases of Functional Disease.*—1. Post-influenzal.—The symptoms due to the legacy of influenza varied considerably: there was bodily and mental weakness, pain or discomfort, referable to the cardiac region or its neighbourhood, giddiness, headache, palpitation, or gastro-intestinal derangement. The pulse was generally fast and soft, and sometimes irregular. The area of percussion dulness in the cardiac region was apparently mostly increased in varying degree, being in a few cases considerably so. In none was a murmur present. 2. Overstrain.—They were apparently referable to overwork or mental worry. In some it appeared to be an acutely produced condition, as the result of too vigorous bodily exercise after a prolonged period of rest. In others it seemed to be of more gradual production. 3. Neurotic.—This is a variable group. In some the disturbance was probably of primary central origin, as in people of high-strung, sensitive natures, sometimes with an undue perception of their own heart's action, while in others it was apparently referable to an abuse of tobacco, and in others to a peripheral stimulation of the vagus from a severe gastric or intestinal catarrh, which was the beginning of the illness. 4. Anæmia, etc.—They showed general deterioration of the system, anæmia, loss of energy so characteristic of prolonged town life, etc.

The symptoms and signs in these three latter groups were somewhat similar to those of the first,—breathlessness, even amounting to dyspnœa, or a sense of suffocation on exertion, being more frequently complained of; tenderness in the region of the liver, inability to lie on the right side, disturbed sleep, fulness of the veins of the root of the neck, pulsation in the second left interspace just outside the pulmonary area, or in the third, fourth, or fifth intercostal spaces immediately to the left of the sternum, or in the epigastrium, and systolic murmurs, were occasionally observed.

The general effect of the therapeutic agents, baths and exercises, upon the majority of these cases was much the same. Their general condition was improved, many of the troublesome symptoms disappearing altogether. After each administration the average diminution in the pulse was 6 to 7 beats, the maximum being 15, and the minimum 0. The average reduction in the area of cardiac dulness in the fourth interspace was apparently ⅝ to ¾ inch, the maximum being 1¼ inch, and the minimum practically *nil.* The transverse diameter of this area in these cases varied between 4 and 7 inches. The reduction was generally greatest on the right side; thus in two cases of 7 inches there was an apparent diminution of nearly 1 inch on the right side (from 3 to 2), and of about ¼ inch on the left side.

II. *Cases of Organic Disease.*—1. Valvular Lesions.—Some were of rheumatic, and others of apparently spontaneous origin. In one case the disease had been in existence for over ten years, and in another for over twenty; and some of them were fairly good illustrations of the evils of venous congestion, œdema, etc., which follow upon loss of compensation.

The average diminution in the pulse was 8 beats, and reduction in the area of cardiac dulness $\frac{1}{2}$ to $\frac{5}{8}$ inch, measured in the fourth interspace. The primary extent of the dulness in this interspace varied between $7\frac{1}{2}$ and 5 inches, and the left side was, if anything, more diminished than the right. They were generally improved in health. One, a doctor, with mitral disease, wrote me about five weeks after the end of his course, that he was better than he had been for years; and again, about a month ago, to the effect that the improvement had partly disappeared, but that he was still better than before his course of treatment.

2. Congenital Heart Disease.—I have seen patients who have greatly improved under treatment, but never anything to indicate a disappearance of the primary lesion.

III. *Cases of Simple Angina Pectoris and Graves' Disease.*—I have hardly seen a sufficient number of these cases to enable me to give definite data, but, generally speaking, I am able to corroborate the experience of others, that improvement does occur in some of these cases.

My experience of the System has undoubtedly very favourably impressed me. It has enabled me to corroborate its claims to be regarded as a therapeutical agent of considerable value; but while doing so in general, I am unable to do so in all its details, or to support some of the most striking claims it has put forward.

Before proceeding to discuss the pulse and heart, I may glance for a moment at the subjective phenomena which are pointed to—and rightly, I think—as excellent evidence in its support. The patient's own notions regarding his progress generally receive our due attention. If he believes he is recovering, he is not so very often wrong. I was much struck by the remark made by a scientific friend, a learned and deservedly eminent professor, who was himself undergoing the treatment, in the course of a conversation upon the method, to the effect that the doctors might not like or approve of it until they understood it, but that at present the unfortunate patients themselves did like it, as they found themselves benefited by it. They have good reason for this if they can point, as they often can, to the disappearance of symptoms which may have formerly made their lives miserable.

We accept these statements and value them, but it is a different thing when we come to base physiological arguments upon them. Thus it may be true—nay, it is true, as I have myself verified in my own person—that the first sensation of cold in entering the bath is quickly replaced by one of warmth, especially in the carbonated waters, but it does not necessarily follow, as so many suppose, that this is due to a definite nervous stimulation. Indeed, the primary difficulty of relying upon sensations experienced under water at once occurs to us. The personal factor, which depends largely upon the state of the circulation, the activity of the sweat secretion, the excitability of the nervous system, and the habits and customs of the patient, has to be carefully taken into account, and it is next to impossible to properly appreciate any factor so variable. What is cold to one man is warm to another. I may mention the remark I heard made by a distinguished colleague in Edinburgh, in the course of a conversation upon the value of a cold bath in the morning, as a somewhat striking illustration. In referring to his own habit of taking a cold bath all the year round, he said he always filled his bath three-quarters full from the cold tap, and then lay down and remained in it until he got warm. It would hardly be wise for us to advise all our patients to follow this Spartan example.

I shall defer for a little the further consideration of the influence of the temperature, pressure, and CO_2 of the water upon the vascular and nervous mechanisms of the body, and pass on at once to the objective phenomena.

In referring to the objective phenomena I have already pointed out the important part played by percussion in estimating the effects of the treatment. Indeed it is customary to refer to the diminution observed in the area of cardiac dulness after each application as an indication of the progress made by the patient, and charts have been freely published under the conviction that they truly represent the area occupied by the heart before and after treatment. I have never been able to convince myself that this is really the case. There are too many difficulties in the way. In the first place, I do not believe that percussion of the heart can be made with anything like sufficient accuracy to meet the requirements of this assertion. I was much impressed with the difficulties I have frequently met with in outlining the cardiac area. In some cases it seemed, in part at any rate, easy enough; in others it was impossible to come nearer than an approximate guess. This is especially the case on the right side, and in the upper part of the sternum. I am certain that the experience of others will bear me out in this. Indeed, when working, as I was many times privileged to do, along with other and skilled clinicians, I have observed the same uncertainty in them, and it was the rule and not the exception to find considerable variations of opinion as to the exact cardiac boundaries in any individual case. I had often previously experienced this difficulty in ordinary clinical work, but it had not impressed me so strongly as it now did, when percussion had to be made so frequently, and played such an important part in the diagnosis, prognosis, and progress of the cases. I was led to pay special attention to it. I outlined the heart by percussion, in a great many cases, on the cadaver, and compared this area with that actually occupied by the heart. The cases selected were representative of the different ages, different thicknesses of thoracic wall, and depth of cavity. I found the percussion outlines to be almost invariably nearly accurate, the different characters of chest, etc., presenting no real difficulty. Extensive emphysema of the lungs, or cases of considerably dilated right heart, where it was covered deeply by lung, did, however, present some difficulty, especially on the right side, the percussion line erring sometimes as much as 1 inch to 2 inches.

Ordinary percussion difficulties must, therefore, be chiefly due to conditions prevailing during life. So far as we can see, these ought to be one or more of the following factors: the movements of the heart itself, of the lungs, of the stomach and liver, the vibrations of the sternum, and the elasticity of the other tissues or those characters peculiar in some way to their vitality, and so far unknown to us. The ordinary systole and diastole of the heart are so rapid and short-lived that they cannot really affect percussion. By taking proper precautions the influence of the stomach and liver can be readily eliminated. The vibrations peculiar to the sternum, and those, if any, attributable to the other tissues, while they materially alter the percussion note and make its correct appreciation more difficult, can hardly be held to change much during any moderate interval of time at any rate. There remains, then, apparently only the movements of the lungs. Any one can readily satisfy himself that they may materially alter the area of cardiac dulness. I have made several observations on this point in healthy adults, and have found wide variations. I have found the area to be reduced by nearly one-fourth in its transverse diameter in the fourth interspace, by directing the individual to breathe more deeply than usual for five minutes continuously. There are considerable individual variations, depending upon the configuration of the chest, the respiratory habit of the patient, and perhaps the size of the lungs themselves. In some, even a few deep inspirations, or a single one, materially diminish the area. I am of course speaking of the deep cardiac dulness, and yet no one would for a moment contend that these differences represented actual diminutions in the size of the heart. If these observations be correct, it follows that percussion cardiac areas lose their reliability as indices of the size of the organ, unless always obtained under precisely similar conditions of respiration and lung expansion. Trivial actions, *e.g.*, a few minutes' gentle exercise, smoking a cigarette, even change of posture, seemed to have an appreciable influence. I need not, therefore, point out how difficult it is to secure such conditions; indeed, I found very considerable variations in percussion of the same healthy individuals on each successive day, always under what I judged to be similar circumstances. Some apparently showed little variation, others a good deal. I had the same experience when I tested them at different times upon the same day. Lastly, I compared the results obtained in the same individuals (four healthy males) several times within fifteen minutes, they sitting the while on an easy chair, and found that two of them varied decidedly nearly every time, and the other two slightly. I carefully marked the position of the apex-beat each time in all the cases, and found that in most it remained fairly stationary, although the area of cardiac dulness sometimes showed a good deal of change, while in others there was a slight degree of displacement, amounting even to half an inch. I was considerably puzzled by these results, as they seemed to indicate changes other than those attributable to the lungs, and if so, they could only be referred to the heart itself. It looks as if the heart were capable of considerable movements other than its ordinary rhythmic contractions, which affect the apex less than any other part of it. When discussing this question with Dr George Balfour, he mentioned a paper by Heitler of Vienna as likely to interest me, on "The Percussion Conditions in the Normal Heart." He afterwards kindly sent it to me. It contains the results of much careful observation. He dwells upon the very varying boundaries given by writers for the right, left, and upper boundaries of the healthy heart, obtained by percussion, and points out that the wide differences of opinion probably arose from the difficulties in the way of obtaining accurate percussion areas. He gives the results of his own observations upon healthy adults. He holds that the area of cardiac dulness is constantly varying; that as the observer percusses over the anatomical cardiac area from without inwards, or in the opposite direction, or vertically, he finds the dulness disappearing under his finger, to reappear again immediately; that any spot in this area is at one time dull and the next clear; that, in short, the whole cardiac dulness disappears and reappears with peculiar regularity. It appears mostly four times, less seldom three to five times, in a minute, and fades away gradually. Its duration is from two to five or six seconds. He attributes these disappearances to actual changes of volume in the heart, which do not affect the pulse, and therefore holds that, to be of any value, percussion of the heart must be always made during the phases of full expansion. These observations of Heitler explain the variations met with by me in normal individuals, and I am inclined to place considerable value upon them. Since reading his paper I have made a number of further observations upon the percussion areas of the healthy heart, and while I cannot say that I have been able to fully verify his statements, I have obtained results that I am really unable to explain except upon some such hypothesis as he has put forward. The difficulties experienced in percussion of the normal heart become greater, and not smaller, when we have to deal with dilated hearts. I do not deny that these may be fairly successfully overcome in some cases in defining the left border when we have a palpable apex-beat to help us, and also in approximately outlining the base; but they can very rarely be so where the right border is concerned. Its increased distance from the anterior wall of the chest and increased lung covering serve to increase our difficulties. When we take into account all the possible sources of error in such cases, we naturally hesitate about placing much reliance upon cardiac areas as mapped out by percussion. I would not have it inferred that percussion of the heart is useless in all cases. It ought always to be diligently practised, and if every care be taken we may, in many cases at any rate, arrive at a fairly accurate estimate of its average size; but I feel compelled to deprecate the practice of speaking of the heart as an organ accurately outlinable at all times by percussion.

If this be true, as I believe it to be, it must have an important bearing upon the contention that there is an actual diminution in the size of a dilated heart after a single bath or after a single *séance* of the exercises. There appears generally to be a diminution in the area of cardiac dulness. My own experience fully verifies this, but I have never been able to accept that this was really due to a decrease in the size of the heart. A diminution of 1 to 1½ inches all round—*i.e.*, of 2 to 3 inches in transverse diameter—has been noticed in many cases, and if we try to consider what this means for such an organ as the heart, we find it still harder to admit that this is possible in the space of a comparatively small number of minutes. Dr G. V. Poore has strongly emphasized this difficulty. As the diminution in size is supposed to last for only an hour or so, it seems *à priori* hardly possible that such great differences in the size of a sensitive organ like the heart could possibly occur within such short intervals of time without giving rise to serious symptoms referable to the heart and brain.

How is the diminution in the area of cardiac dulness to be accounted for if it be not due to a decrease in the size of the heart? The most obvious suggestion is a greater expansion of the lungs, and Dr Poore has already advanced and supported it by observations made upon his own person. I am convinced from my own observations at Nauheim and at home, that the respirations are rendered both fuller and deeper by both the baths and the exercises. This is, indeed, allowed by Dr Bezly Thorne and other authorities. The sense of oppression in the chest experienced by the bather of itself naturally leads to this result, apart from any direct stimulation of the respiratory centre which may be present. As for the exercises, it is to be remembered that they are, with few exceptions, taken in the standing posture, and the increased respiratory action is one of the marked results. The patient has, as a rule, to be cautioned to keep his mouth open and breathe easily. Increased lung expansion is thus brought about, and a greater area of the heart is covered. But if the lung expands anteriorly, why not also in other directions; and it is freely admitted that the lower limits of the lung as determined by percussion remain pretty much the same. Suppose we grant that this line is always pretty accurately determinable and stationary, it seems to me to favour our contention rather than otherwise.

The body is completely immersed in the bath, the head alone remaining above the water, and it naturally follows, from its deeper immersion, that there is more pressure upon the abdomen than upon the thorax. Dr Poore has already pointed this out, and I quite agree with him, and am unable to understand Dr Bowles's contention to the contrary. The abdominal walls are indeed markedly contracted, and the abdominal cavity markedly lessened. I specially noticed this in my first Nauheim bath, and have since found it to be the general rule. This must press the liver upwards, and so constitute an opposing force to the expansion of the lungs downwards. Not only may the fixity of the line of the diaphragm be thus explained, but it may determine a still greater lung expansion in the way of least resistance, viz., anteriorly.

The apex of the lung may also to a certain extent participate; but as expansion is generally much less free in this direction, it is natural that percussion does not usually make out much change here. It may still be argued, however, that the change in the position of the apex-beat yet remains to be accounted for, viz., its displacement inwards and upwards. It is not unusual to find this amount to as much as half an inch or thereabouts, and a full inch has been frequently recorded. It is to be remembered, however, that the apex-beat is not caused by the apex of the heart, but by a part of the anterior wall some little distance from it, the precise part varying somewhat according to several circumstances. The increased expansion of the left lung may materially affect this, first by covering over a little more of its anterior surface, and secondly by perhaps bodily displacing it inwards towards the middle line. I have tested the influence of the latter factor in the cadaver by inflating the left lung through its bronchus. Moderate expansion displaced the whole heart considerably over towards the right, the apex being the most movable and the base the least. When both lungs were inflated at the same time, the displacement was less marked, but it was always decided, and a very moderate expansion indeed sufficed to effect a displacement inwards of an inch in extent. This displacement was always at the same time upwards, owing to the natural curve of the arch of the diaphragm. On all grounds, then, I fear that we cannot admit that the diminution in the area of cardiac dulness met with in the application of the Schott System corresponds to a decrease in the size of the heart. It is quite possible, nay probable, that some decrease does take place and gradually establishes itself in the course of the treatment, but it is not of daily occurrence, nor is it to be measured accurately by ordinary percussion; and to trust to this as fully as is at present being done is not only to mislead our patients but ourselves, and to shut our eyes to the solution of the problem upon other lines. The evidence derived from auscultation, and occasionally also from inspection and palpation, is more reliable. The heart sounds generally became louder, clearer, and more decided in character. This does not necessarily mean increased cardiac tone, for I doubt if we are able to assert that weak sounds in themselves mean a weak heart, and *vice versa;* and, moreover, loud, clear, and sharp sounds are frequently heard in dilated hearts, and are therefore consistent with an augmentation instead of a diminution of the dilatation. On the whole, however, I think we may say that the heart sounds point to the gradual establishment of an improved condition of heart action. This is still further indicated by the occasional disappearance of a functional systolic or the reappearance of a presystolic mitral murmur. I have only seen one case treated by this method, in which there was visible pulsation in the third, fourth, and fifth interspaces on the left side, close to the sternum. It gradually disappeared after about four weeks; but it ought to have disappeared and reappeared daily for some time, at any rate, if the large temporary decreases in the size of the heart had actually occurred. I notice that Wethered says he saw epigastric pulsation almost disappear after fifteen baths, spread over a period of about twenty days. I do not gather that he observed it after any single application. It is not to be forgotten, too, that apparent spontaneous diminutions in dilated hearts are frequently observed.

(*To be continued.*)

VI.—PATHOLOGY OF THE NERVOUS SYSTEM IN RELATION TO MENTAL DISEASES.

By W. F. Robertson, M.D., Pathologist, Royal Edinburgh Asylum, Morningside.

(*Continued from page* 633.)

Article VIII.

Morbid Conditions of the Intra-cranial Bloodvessels. (*Continued.*)

Hæmorrhage.—Ordinary cerebral hæmorrhage, or "true sanguineous apoplexy," constitutes the gross lesion in the majority of cases of paralytic insanity. It is also very common in senile insanity, which is so closely allied, both clinically and pathologically, to the former class of mental diseases. In the latter the blood effusion, at least when of old standing, has not implicated the motor areas to any extent. I have found such hæmorrhages in 11 cases of senile insanity out of 47. In several of these they were multiple. Apart from cases of typical senile insanity, however, the aged insane are certainly very prone to cerebral hæmorrhage. I have had 7 such cases out of 190 post-mortems. In that number of autopsies there were altogether 20 cases in which there was evidence of old or recent cerebral hæmorrhage of the kind under consideration. It would be of much interest to know precisely how these figures compare with statistics of cerebral hæmorrhage in the mentally sound. It is exceedingly difficult, however, to obtain statistics that will bear comparison, owing chiefly to the fact that the mean age of inmates of asylums is much greater than that of general hospital patients. Certainly a far larger number of such cases are met with in the post-mortem rooms of asylums than in those of general hospitals. For example, working in the latter, Bramwell (1)[1] observed 14 cases in 886 examinations. But the mean age of his cases was only 50, while that of mine was 66. This disparity would probably be equalled by that between the mean ages of the total number of cases in the two sets of statistics, so that the figures do no permit of comparison with regard to the more important question of the relative frequency of ordinary cerebral hæmorrhage in the insane and in the mentally sound. By far the most common cause of hæmorrhage in these cases is, there can be little doubt, rupture of miliary aneurisms of the intra-cerebral arterioles. It is to be admitted, however, that a fairly large proportion of cases has a different origin. This has been especially insisted upon by Löwenfeld (2) in his important work upon spontaneous brain-hæmorrhage. He maintains that the extravasation is very commonly associated with other forms of vascular disease, and attaches also special importance to conditions causing increase of blood-pressure in determining rupture. Cerebral hæmorrhage, it is known, occasionally follows embolism. Obersteiner (3) states that atheromatous patches in the cerebral arteries may become detached and block vessels further on, and that as the result of this embolism their wall ruptures. The well-recognised proclivity to cerebral hæmorrhage in general paralysis has been attributed by Bevan Lewis (4) to weakening of the vessel walls by inflammatory change.

Multiple minute recent blood-extravasations are to be observed with considerable frequency in microscopic sections of the brain from the insane. Most of such hæmorrhages are capillary ruptures of very small size. When they take place from larger vessels, the blood is often merely poured into the adventitial lymph-space. To this condition the name "dissecting aneurism" has been applied by some authors. The importance of these recent extravasations must, I think, be regarded as very small indeed. They seem to be due largely, as is stated by Gowers (5), to the "extreme mechanical congestion such as attends all asphyxial modes of death." It is easy to understand that vessels weakened by disease of any kind, and especially by the molecular changes that tend to occur in the moribund state, must be specially prone to rupture under such conditions. There are many writers who refer to these small hæmorrhages as if they commonly took place from time to time throughout the course of the patient's illness in certain forms of insanity. The chief evidence that they find in support of this view seems to be the presence of large quantities of hæmatoidin round the vessels. Now, as already stated, the yellow granules that have been looked upon by many observers as composed of this substance are for the most part not of this nature at all, but a morbid accumulation of a normal tissue pigment. They are, therefore, not always evidence of previous hæmorrhage. Further, the occurrence of small sclerosed areas such as one would expect to result from the larger of these extravasations are, in my experience at least, exceedingly rare in the brain of the insane. I am therefore convinced that the frequency of the occurrence of these minute hæmorrhages has been greatly over-estimated. At the same time there is satisfactory evidence that such extravasations do occur in some cases. They take place especially in association with miliary aneurisms and the other vascular changes that accompany them. Probably some of these aneurisms, in rupturing, only lead to a small extravasation, but I think that a more common source of the effused blood is the new capillaries that develop subsequently to the complete or partial obliteration of vessels by thickening of their walls, as previously described. Hæmorrhages are specially apt to occur from these new vessels shortly before death.

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[1] The figures within parentheses refer to Literature at end of paper.

A special tendency to the occurrence of ecchymosis has been observed in some cases of insanity. This subject has recently been gone into very fully by Dawson (6) in connexion with the description of a very interesting case. He concludes that we must assume the existence of some gradual vascular degenerative process to account for the condition. It is more than probable that in such patients capillary hæmorrhages may occur in the brain as well as in other parts of the body.

The subject of subdural hæmorrhage was considered in the third article of this series under *Subdural Membrane Formation.* It was there contended that false membranes in the subdural space may arise in one of two ways,—either in consequence of a simple hæmorrhage into the space, or as the result of multiple hæmorrhages from vessels of the dura, depending on certain morbid chronic changes in this structure. Since the publication of that paper, I have continued the study of subdural membrane formation, as I felt there were many points which still remained obscure. I must reinsist upon the great difficulties that the thorough elucidation of this subject has presented, and I would submit that this fact is an ample excuse for previous failure to recognise certain morbid changes that I now know to form an essential part of the process. It was only after considerable improvement of details of technique, and long practice, that I was able to produce surface sections of the dura of sufficient thinness for hæmatoxylin and eosine staining. The study of these has revealed changes that could not be recognised in the thicker sections, which required to be stained with other more transparent dyes. A full account of these later investigations will appear in the *Journal of Pathology and Bacteriology*. It will be sufficient to briefly state here some of the more important conclusions bearing upon the subject of subdural hæmorrhage.

The hyaline vessels previously described are new capillaries that had penetrated a thin blood-clot on the surface of the dura, and afterwards become obliterated and covered over by the surface endothelium. The most important early morbid change that occurs is proliferation of the endothelial cells of the surface and of the perivascular canals, exactly analogous to that which occurs on the opposite side of the subdural space. This change in the perivascular canals leads to the compression and obliteration of many of the capillaries of the rich vascular network at the inner aspect of the dura. Following upon this obliteration new capillaries shoot out upon the inner surface. These new vessels are developed in very large numbers in many cases of insanity. They tend to rupture at numerous points when they become affected by the fatty and other molecular tissue changes that accompany the moribund state in certain modes of death. There is proof that all of these false membranes, with a very few exceptions, are the development of a few days or a few hours preceding death. It is from these new capillaries that the blood which forms the false membrane is chiefly effused, though there is conclusive evidence that under similar conditions hæmorrhages occur with considerable frequency from the original vessels of the dura, especially from those that are partially or completely obstructed by accumulations of endothelial cells in the perivascular canals.

Atheroma.—I have found it exceedingly difficult, either from a study of what has been written upon the subject, or from personal observation, to determine the importance of the relation of atheroma of the cerebral vessels to insanity. There appears, indeed, to be no conclusive evidence to disprove the assertion of Long Fox (7) that, as it occurs in the insane, atheroma has more to do with age than insanity. Statistics that would permit of fair comparison of the frequency of its occurrence in the insane and in the mentally sound are practically unavailable. I would here merely give my own impression, which is not founded upon precise data, that high degrees of atheroma of the larger cerebral vessels are far more commonly met with among patients examined after death in asylums than among those examined in general hospitals. Some figures regarding its occurrence in senile insanity and general paralysis may be given. Out of 47 cases of senile insanity there were 9 in which I found atheroma to be entirely absent from the large cerebral vessels. In 14 there was what might be termed an extreme degree of atheromatous change. Its absence in so large a proportion of cases is sufficient evidence that it has not a primary importance in the pathology of this form of mental disease. Out of 46 cases of general paralysis atheroma of the larger cerebral vessels was absent in 40. In only 1 of the remaining 6 was it well marked. The opinion of different authorities varies somewhat as to the occurrence of atheroma in the small cerebral vessels. Obersteiner (3) believes it to be "one of the most serious diseases of the small brain-vessels." Gowers (5) remarks that though the small arteries of the cerebral substance do not suffer in the same degree as the larger vessels, their orifices are often narrowed and closed, though the main trunk is pervious. As already stated, the thickening of the intima of the small arterioles, which is so commonly associated with the occurrence of miliary aneurisms, is regarded by Zenker, Eichler, and others as the same morbid condition as typical endarteritis deformans of the larger vessels. It is unnecessary to describe here the microscopic appearances of atheromatous cerebral vessels. I give, however, a collotype figure (Fig. 68) of a transverse section of a branch of the middle cerebral artery presenting the condition from a case of senile insanity, and also one of a similar vessel from a case of syphilitic insanity, showing endarteritis obliterans (Fig. 67). They represent typical examples of these two lesions, and afford an instructive contrast.

Endarteritis Obliterans.—The interest of this condition in relation to mental diseases lies in the fact that it is the chief lesion found in the brain in what is known as the vascular form of syphilitic insanity. Cases of this nature are not very common, and consequently a number of them have formed the subject of papers in the medical journals. The larger vessels supplying the cerebrum and their branches are those typically affected. The disease is generally extensive, and developed to a severe degree, so that large tracts of the hemispheres have their blood supply partially or completely cut off. Extensive softenings are thus frequently produced. Some remarkable cases are mentioned by Clouston (8), in which the white matter of the hemispheres had almost exclusively suffered in this way, leaving the grey matter intact. The fatal result in this disease seems frequently to be determined by thrombosis of the affected vessels. This evidently in part accounts for the very extensive character of the softenings often found on post-mortem examinations. I have met with two typical cases of this form of insanity in the course of 190 examinations. In the first, both middle cerebral arteries and many of their branches were greatly thickened, their diminished lumen in some instances containing recent, pale, firm clots. The greater part of the left hemisphere was reduced to a pulpy consistence. Microscopic examination showed typical endarteritis obliterans (Fig. 67). The branches of the middle cerebrals throughout the Sylvian fissures were glued together by tissue which had the characters of a caseating gumma. In the second case the arterial disease chiefly affected a large branch of the left middle cerebral artery. This branch was completely occluded, and there was extensive softening, evidently of somewhat old standing, involving the area to which it was distributed. Two small softenings of a similar character were present in the opposite hemisphere. Most of the larger arteries showed nodular thickenings. Microscopic examination revealed in some a typical endarteritis obliterans, in others a dense infiltration of the adventitia with round cells, with or without thickening of the intima. The latter condition appeared to be a true nodose periarteritis, a comparatively rare affection, the subject of which was recently fully gone into in a paper by Alexander Bruce (9) in this Journal. A case of syphilitic insanity in which vascular disease of this kind occurred was described by Batty Tuke (10) in 1874, this being the first recorded observation of the condition. The description given shortly afterwards by J. J. Brown (11) of the microscopic appearances of the vessels in two other cases render it probable that they were of the same nature. It therefore remains a question to what extent the arterial disease in the vascular form of syphilitic insanity may be a periarteritis. Possibly the two forms are more often associated with each other than has been supposed.

Periarteritis.—The somewhat rare condition of nodose periarteritis to which reference has just been made, and which typically affects arterioles of sufficient size to be easily recognised with the unaided eye, requires merely to be mentioned under this heading. An exactly similar, but in some respects pathologically distinct, morbid condition, not associated, however, with any like change in the larger vessels, affects the small pial and intra-cerebral arterioles, and probably also to some extent the venules in advanced general paralysis. In fresh sections many of these vessels show either general or localized, more or less dense aggregations of deeply stained cells upon their walls (Fig. 45[1]). Sections of hardened tissues prove that these cells are leucocytes, and that they are usually confined to the adventitial lymph-space when they occur in small numbers (Fig. 52), but that they generally extend to the surrounding nervous tissues when they are numerous. Most authorities, including Bevan Lewis and Obersteiner, are agreed in regarding this condition as inflammatory in character. This view, however, is not adopted by all authorities. For example, Binswanger (12) is of opinion that "these leucocytal crowds are only to be taken as results of long-standing and oftrepeated venous stasis." Upon this point my own observations lead me to agree with the most commonly accepted view. So far as is at present known there appears to be no pathological process except inflammation that is attended with so copious a migration of leucocytes from the vessels. It must therefore, I think, be accepted that the condition is a true periarteritis. This conclusion must not, however, be understood to warrant the assumption that general paralysis is an inflammatory disease. There is very strong evidence to show that such inflammatory changes are merely of a secondary character. I find that they are absent in about one-fifth of cases of advanced general paralysis, and that in early cases they are either absent or only developed to a very slight degree. Syphilitic disease of the larger cerebral vessels seems to be of very rare occurrence in general paralysis. It is of considerable interest to note that, on the other hand, the former appears to be commonly associated with a periarteritis of the minute vessels. In Alexander Bruce's two cases of nodose periarteritis, cellular infiltration of the adventitia was found in some of the small vessels within the nerve substance; and in the two cases of syphilitic insanity to which I have referred, there was a well-marked degree of the same condition in the pial and intra-cerebral arterioles (Fig. 46). In many cases of alcoholic insanity there is also a degree of cellular infiltration of the adventitia of the intra-cerebral arterioles. It presents, however, characters of a somewhat different kind from those just described. The cells, for the most part, stain very faintly in fresh sections, and are probably chiefly proliferated connective tissue corpuscles, and not leucocytes. It is therefore, I think, somewhat doubtful if the condition can be correctly regarded as an inflammatory one. In all other forms of insanity, as far as my experience goes, cellular aggregations in the walls of the small pial and intra-cerebral vessels are of the rarest occurrence. The chief importance of this periarteritis probably lies in the fact that the migrated leucocytes tend to obstruct the flow along the adventitial lymph-channel. Bevan Lewis also considers it to be the cause of the special proclivity of general paralytics to cerebral hæmorrhage. As already stated, I have not found that it is in any special way associated with the development of miliary aneurisms.

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[1] See Plate, p. 632.

Granular Degeneration.—This is a morbid change described by Löwenfeld (2) as commonly affecting the muscular coat of the cerebral arterioles in apoplectic brains. It is also described by Obersteiner (3) as pseudo-hypertrophy. Löwenfeld states that the morbid process consists in a swelling up of the muscular fibres, the development in their interior of granules which are not of a fatty nature, disappearance of the nuclei, and, finally, breaking up of the fibres. It is one of the changes to which he attaches considerable importance in relation to cerebral hæmorrhage. It is clearly the same condition as that which I have described as following hyaline fibroid change, and more especially hyaline degeneration of the intima (Figs. 62 to 66). Löwenfeld himself fully recognises the fact that it is very commonly associated with changes in the other coats. To what extent it may occur independently of such changes is a point that remains to be investigated.

Calcification.—The intra-cerebral vessels appear to be specially prone to a form of calcification that occurs quite independently of atheroma. According to Obersteiner (3 and 13) the change is a very common one. He states that he has frequently found it in the muscular coat even in healthy subjects. When it occurs in the adventitia he thinks it has a more important pathological significance. Most other authorities look upon it as a somewhat rare disease. Very interesting cases have been described by Bramwell (14) and Mallory (15), the latter of whom has discussed the pathology of the condition at considerable length. I have met with two cases in the course of 190 post-mortems upon asylum patients. It is not certain, however, that this form of arterial disease is more common in the insane than in other persons. Although occurring generally at an advanced age, it is by no means confined to this period of life. In both of my cases the change was limited to the cerebellum. This appears to be the portion of the encephalon most commonly affected, but the change has also been found to involve extensive areas of the cerebrum. The affected vessels generally project like bristles from the cut surface of the fresh tissue. According to Mallory the infiltration with lime salts is preceded by colloid or hyaline degeneration. The colloid material forms a basis for the deposit. He states that in the arteries the middle coat is first affected, afterwards the adventitia. The walls of the capillaries and veins are at the same time generally affected. Extensive involvement of the capillaries leads to the formation of "small sand-like deposits and calcareous concretions." Under the microscope the affected vessels appear thickly studded with highly refractile colourless spherules. When they are treated with dilute nitric acid the colloid substance is brought into view. The change when advanced leads to extensive occlusion of the affected vessels and consequent atrophy of the surrounding tissues.

Occurrence of Fuschine Bodies in the Brain.—As these bodies may frequently be observed in the cerebral cortex, and as they are developed from a tissue element which, so far as it occurs within the brain, belongs essentially to the vessels, it is necessary to make a brief reference to them here. They have been recognised in the brain by numerous observers, but they have been almost constantly confounded with colloid bodies, from which, however, it can be shown they are quite distinct. Colloid bodies, as it is now well known, are droplets of myelin derived from degenerating medullated nerve fibres. Fuschine bodies were described by Russell

(*Brit. Med. Journal*, 13th Dec. 1890) as parasites in cancerous tumours, some of them being intra-cellular and others being extra-cellular. While his views, as far as they apply to those that are intra-cellular, have since been supported by the now well-known researches of Ruffer (*Journal of Pathology and Bacteriology*, vols. i. and ii.) and others, it has been shown that the extra-cellular forms are of quite a different nature. As far as I know, the origin of these extra-cellular fuschine bodies, to which the name is now alone applied, has not yet been correctly explained. It has, however, been traced by Russell himself since the publication of his paper. From observations of my own I can confirm his view, which is that these bodies are developed from the granules of the granular cells of connective tissue, or plasma cells. Under certain conditions these granules enlarge and tend to fuse, preserving generally their strong affinity for fuschine. Plasma cells occur in small numbers in the adventitia of the intra-cerebral vessels, and I have been able to observe developing fuschine bodies in them. In fresh sections these structures are easily distinguished from colloid bodies, as they show a marked affinity for the aniline black stain, while the colloid bodies remain colourless. I am unable to make any definite statement from observations of my own as to their exact relationship to the amyloid bodies that are so common in the pons, medulla, and cord, and with which they are regarded by some as identical. They may be found in almost every morbid brain in small numbers. In general paralysis they are often exceedingly numerous.

Diffuse Dilatation, or Ectasis.—A condition of slight diffuse, often irregular, dilatation is very common in the cerebral arterioles. It differs essentially from aneurismal dilatation in that all the coats of the vessel remain intact, though they may show morbid changes. It is sometimes accompanied by a degree of tortuosity. Authorities are generally agreed that it occurs most commonly in general paralysis, though it is also frequent in many other forms of nervous disease. Bevan Lewis (4) attributes its occurrence in general paralysis to weakening of the arterial walls by inflammatory changes in them. Obersteiner (3) thinks that it is due to a vasomotor paresis affecting individual groups of muscle fibres. In hardened preparations of the brain irregular dilatation of the capillaries is also very frequently to be observed in general paralysis and other forms of insanity.

Embolism and Thrombosis.—There is probably little of a special character in the relation of these to mental diseases. A certain number of cases of paralytic insanity follow cerebral embolism. Obersteiner and Löwenfeld both draw special attention to embolic plugging of the small cerebral vessels by atheromatous material torn from the intima of the larger arteries. The former believes that it may lead rapidly to rupture of the affected vessels behind the obstruction. The latter states that it results in a local increase of blood-pressure, and a tendency to the formation of miliary aneurisms. The occurrence of thrombosis in advanced endarteritis obliterans has already been referred to. It is probably also common in the later stages of other changes causing narrowing of the lumen of the small cerebral vessels.

Obstruction and Distension of the Adventitial Lymph-Channel.—Various abnormal elements commonly occur in the adventitial lymph-spaces in morbid brains. Leucocytes and adventitial pigment may be found in small quantities in this situation apart from cerebral disease; but, as already indicated, they are sometimes present in great excess, especially in certain forms of insanity. In this class of cases there may also freqently be observed red blood-corpuscles, hæmatoidin granules, fibrin, fat granules, colloid bodies, and various kinds of débris arising chiefly from disintegration of nerve cells. The presence of these elements in the adventitial channel naturally leads to a certain amount of obstruction to the flow of lymph along it. Batty Tuke and Woodhead (16), and especially the former (17), have drawn attention to the great importance of this implication of lymphatic ducts in insanity. Various morbid changes in the vessel walls, especially hyaline fibroid degeneration, must also frequently lead to narrowing of the adventitial lymph-channel. In association with these various forms of obstruction the space very commonly becomes abnormally distended at places with lymph. Similar distension may, however, result from obstruction of the extra-cerebral lymph-channels, and it may attend general cerebral atrophy independently of obstruction to the lymph flow at any point.

État Criblé.—The question of the presence of perivascular lymph-spaces in the normal brain has already been considered, and reasons have been given for agreeing with those who maintain that they do not exist. In certain morbid conditions, however, such spaces are exceedingly common around the larger intra-cerebral vessels. They are often easily recognised with the naked eye, giving rise, when numerous, to a cribriform appearance of the brain substance on section. The name *état criblé* was applied to this condition by Durand-Fardel (18), who first described it. It affects chiefly the white matter of the cerebrum and the basal ganglia. In the latter situation, however, there are large lymph-spaces in relation to the vessels which produce to a slight degree a very similar appearance in normal conditions. These wide perivascular canals are common in all atrophied brains, and especially in the senile insane. When examined in fresh microscopic sections they show at one side a vessel the adventitial sheath of which sometimes appears stretched, so as to form an abnormally large adventitial channel. Between this sheath and the brain tissue there is a much wider space. It often contains a considerable number of yellow pigment granules. They are for the most part adventitial pigment. Less commonly they consist of granular hæmatoidin. By some observers they have been erroneously regarded as entirely composed of the latter substance, and have been accepted as evidence of the occurrence of hæmorrhage into the space. The frequency with which this takes place has, I think, on this account been much over-estimated. Most authorities are agreed in attributing the formation of these perivascular spaces mainly to general atrophic shrinking of the brain substance.

(*To be continued.*)

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DESCRIPTION OF THE PLATE.

Fig. 67.—Transverse section of branch of middle cerebral artery from a case of syphilitic insanity, showing endarteritis obliterans. Note the uniform thickening of the intima, and the absence of retrograde changes in the new tissue. From a photograph by W. Forgan. (× about 50.)

Fig. 68.—Transverse section of branch of middle cerebral artery from a case of senile insanity, showing endarteritis deformans, or atheroma. Note the localised thickening of the intima, and the pale area in its outer portion, due to fatty degeneration and calcareous infiltration of the new tissue. From a photograph by W. Forgan. (× about 50.)

Fig. 67

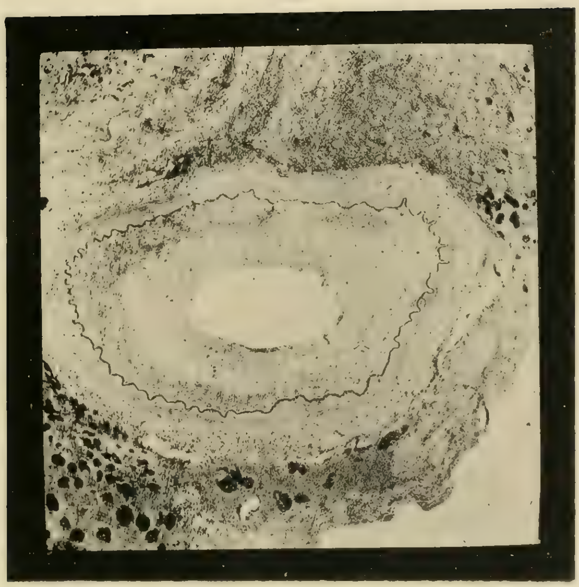
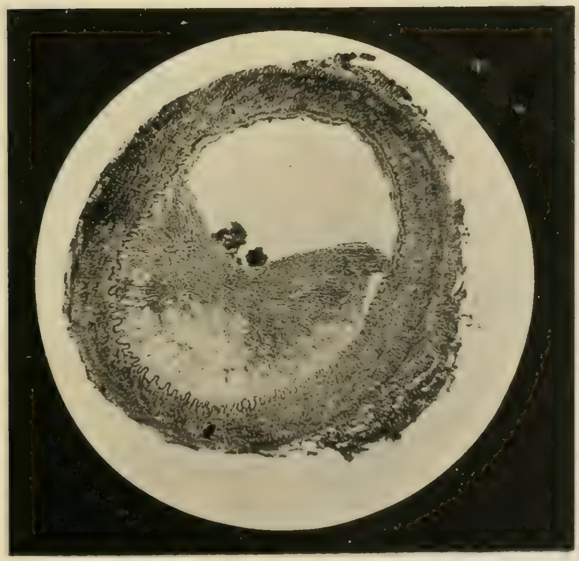


Fig. 68



VII.—ON PAN-HYSTERECTOMY, OR TOTAL EXTIRPATION OF THE UTERUS.

By Christopher Martin, M.B., F.R.C.S. Eng., Surgeon to the Birmingham and Midland Hospital for Women.

(*Read before the Obstetrical Society of Edinburgh, 8th January* 1896.)

The term Hysterectomy is somewhat loosely employed to denote any operation which involves partial or complete removal of the uterus. This removal may be made per vaginam (vaginal hysterectomy), or by abdominal section (abdominal hysterectomy). In partial hysterectomy the uterus is removed at or about the level of the internal os—the cervix being left as a "stump." This stump may be treated by the extra-peritoneal method (the clamp operation) or by the intra-peritoneal method, where the stump is sutured and dropped back into the abdomen.

To-night I propose to direct your attention to complete hysterectomy by abdominal section, total extirpation of the whole organ, *including the cervix*, or pan-hysterectomy.

Freund introduced the operation of total abdominal hysterectomy for cancer, but the mortality was so terrible that the method soon became discredited, and finally abandoned.

Bardenheuer was the first to perform pan-hysterectomy for myoma, and records seven cases with six recoveries. Martin of Berlin has adopted this method, and recommends it with all the weight of his great authority. In America, Baldy, Polk, Krug, Boldt, and others have recorded series of successful cases.

In this country we have been more conservative, and have only adopted the operation in very recent years. We owe its introduction to Jessett of London, and Smyly of Dublin. Jessett did his first case in February 1892, and Smyly followed in the autumn of the same year.

I had the privilege of watching Dr Smyly perform the operation in 1894, and I take this opportunity of expressing my very deep indebtedness to his teaching. During the year 1895 I have performed the operation eight times—six times for myoma, once for rupture of the pregnant uterus, and once in a case of occluded cervix with hæmatometra and pyosalpinx. All my cases have recovered. Before, however, I refer to these cases, let me give a general description of the technique I have adopted.

The patient is prepared as for an ordinary abdominal section. The pubes is shaved, the vagina, vulva, and abdominal wall are scrubbed with soap, washed with lysol solution 1 per cent., and finally with corrosive sublimate 1 in 1000. The vagina is packed with antiseptic gauze, and an antiseptic compress is applied to the abdomen.

The instruments, the silk ligatures, and the silkworm gut sutures, the gauze pads (used instead of sponges), and the water to be used at the operation, are all sterilised by boiling. I try to render aseptic my own hands and those of my assistant and nurses by prolonged scrubbing with soap and lysol, followed by immersion in corrosive sublimate. The patient is anæsthetised, and the gauze removed from the vagina. The patient must be kept as warm as possible on the table, and by hot-water bottles and blankets. I prefer to operate standing on the patient's right side, as for ovariotomy, with the patient lying in the ordinary dorsal position.

The abdomen is opened in the usual way, and the incision is made long enough to permit of the easy delivery of the tumour. When this has been effected, large gauze pads are to be packed into the abdomen above and behind the tumour, to soak up blood, etc., and to prevent undue exposure of the intestines. Sometimes the tumour cannot be delivered through the wound until one or both broad ligaments have been ligatured and partially divided.

The surgeon should now rapidly note the relation of the tumour to the uterus. He should determine the position of the cervix, and the line of reflexion of the peritoneum from the uterus on to the bladder. He should note the position of the ovarian and uterine arteries, and of the venous sinuses of the broad ligament. In some cases he is able to palpate the ureters as they course from the brim of the pelvis towards the bladder. In this investigation, and throughout the whole of the rest of the operation, a good light is essential, and I have found the electric hand lamp of the greatest value.

If you look at Diagram No. 1, you will see that the uterus receives on each side a double arterial supply—the ovarian artery running in the upper third of the broad ligament just beneath the Fallopian tube, and the uterine artery running in the lower third just above the vaginal reflexion. The ovarian and uterine arteries on each side unite in a large anastomotic loop, which runs in the broad ligament close to the lateral border of the uterus. The vessels of one side of the uterus anastomose with those of the other side just beneath the peritoneum. Lastly, a few arterial twigs run upwards from the vaginal arteries into the cervix. The veins in each broad ligament form a plexus (often composed of huge varicose sinuses) which empties in two directions—into the ovarian plexus, and into the utero-vaginal plexus. I have not indicated these veins in the diagrams, but in many cases they are much more formidable, from the surgeon's point of view, than the arteries.

The broad ligaments must now be ligatured in sections and divided (between *double* ligatures) as far down as the level of the internal os. For this purpose I employ Galabin's pedicle needle—a blunt fully-curved needle with two large eyes—and sterilised silk (No. 5). Selecting a spot in the broad ligament free from veins, about the junction of the upper and middle thirds of the ligament, and midway between the uterus and the pelvic wall, a double ligature is passed. Care must be taken that the two ligatures do *not* interlock. By pulling the one forcibly inwards and the other outwards the aperture of puncture is stretched or torn into a transverse slit, about one inch in length (see Diagram No. 1, left side). In some cases I have made this transverse slit by forcing a pair of blunt forceps through the aperture of puncture, and then widely opening them. If this slit be not made, it is difficult to tie the ligatures in such a way that sufficient tissue is left beyond the ligatures to prevent slipping. The two ligatures are tied as far apart from each other as possible, and the intervening strip of broad ligament severed with a snip of the scissors. Whenever possible, I prefer to remove the ovaries and tubes with the uterus, and hence the outer or proximal ligature should be tied outside the ovary and Fallopian tube. It is not a matter of great importance. On the right side of Diagram No. 1 is shown the condition of parts at this stage. In place of the distal ligatures—those on the uterine side—forceps may be applied. I prefer the ligatures, however, as they are not so likely to slip, and they do not by their presence hamper the surgeon. The same manœuvres are to be repeated on both sides. We have now tied both ovarian arteries, and divided the upper third of both broad ligaments.

The middle third of the ligament must be similarly treated. A double ligature is passed through the broad ligament about the level of the internal os, and nearer to the uterus than the first ligature. The aperture of puncture is stretched into a transverse slit, the two ligatures tied as far apart as possible, and the intervening bar of tissue divided. The same manœuvre is repeated on the other side. The next step is to detach the bladder from the anterior surface of the uterus. The line of reflexion of peritoneum from the uterus to the bladder can usually be seen as a whitish line, above which the peritoneum is firmly attached, and below which it is loosely attached, to the subjacent tissue. In case of doubt a sound should be passed into the bladder, and the limits of the viscus determined. A curved incision is now made about two-thirds of an inch above the line of reflexion across the anterior surface of the uterus from one broad ligament to the other. This incision should not penetrate deeper than the subserous connective tissue. The bladder can now be easily stripped off the uterus as far as the vagina by peeling it downwards with the thumb. The surgeon can tell when he has reached the vagina by introducing a stout pair of Spencer Wells' forceps into the vagina, and feeling for them with his finger in the gap between the uterus and the bladder. The vagina should now be opened close to the anterior lip of the cervix, by cutting with scissors on to these forceps, and the opening thus made enlarged by tearing. Hooking the forefinger through this opening into the vagina, and using it as a guide, the posterior fornix is similarly opened with scissors.

The uterus is now attached on each side solely by the lower third of the broad ligament containing the large uterine artery (see Diagram No. 2). Should the ureters be seen, they should be carefully pressed outwards. The surgeon must now ligature the uterine artery, and this is one of the most difficult steps of the operation, particularly if the tumour be a large one, more or less filling the pelvis. He must take care, firstly, to pass the needle on the uterine side of the ureter, otherwise this duct would be tied with fatal results. Secondly, he must leave enough tissue beyond the grasp of the ligature to prevent it slipping. With his left forefinger passed into the vagina from behind, he guides the pedicle needle under the uterine artery close above the mucous membrane of the lateral fornix. There is not room to tie a double ligature and to cut between. These ligatures should be tied on both sides before the uterus is cut away from either. The uterus should now be severed from the remaining attachments, keeping as far as possible away from the two lower ligatures. When this has been done, the uterus with its myomatous outgrowth is entirely free, and may be lifted out of the pelvis.

The cut edges of the vaginal wall should be seized with forceps, drawn slightly upwards, and inspected. Should there be any bleeding points, a few fine silk sutures should be passed to control the hæmorrhage. I have never had any trouble from this source. The pelvis should be sponged clear of clot, and the pedicles and all raw surfaces carefully inspected with the aid of the electric light, any bleeding points being seized and ligatured. All the ligatures, except those controlling the uterine arteries, are to be cut short and the pedicles dropped (see Diagram No. 3). A pair of Spencer Wells' long forceps are passed into the vagina from below, and the two ligatures controlling the uterine artery drawn into the vagina. A thick roll of iodoform gauze must now be drawn down through the vagina by means of the forceps, until only about 1 inch of the gauze remains in the peritoneal cavity just above the vaginal opening (see Diagram No. 4). The bladder and divided broad ligaments fall together over the gauze, but I make no attempt to suture the peritoneum over the gauze, or to otherwise close the vaginal canal. The abdominal wound is now closed by interrupted silkworm gut sutures, no drainage-tube being inserted unless there have been extensive adhesions and there is oozing. The iodoform gauze, which fills the vaginal canal from the peritoneum to the vulva, acts as a drain, and forms an efficient barrier between the peritoneum and infection from below. It quickly becomes encapsuled with a septic lymph, so that, when it is removed on the fifth or sixth day, there is left just above the vagina, and opening into it, a granulating cavity shut off from the general peritoneal cavity, and containing on its lateral aspects the stumps of the uterine arteries.

The method I have just described has at least one recommendation, its comparative simplicity. I may point out that I do *not* use the Trendelenburg posture, as Jessett and the Americans do, nor do I operate sitting between the thighs, as Martin of Berlin and Smyly do. I make no anterior or posterior flaps, as Jessett does. I make no attempt to suture the peritoneum over the open vaginal canal, trusting entirely to the iodoform gauze. I do not use the elastic tourniquet, and I use no special instruments beyond Galabin's needle and the electric lamp.

The after-treatment is very similar to that after ovariotomy. For the first four days the catheter is passed every six hours. The iodoform gauze should be removed on the fifth or sixth day, and after this the vagina should be very gently syringed night and morning with warm weak iodine water. The stitches in the abdominal wall are removed about the ninth day, and the patient is allowed to get up during the third week, and to go home during the fourth week after the operation. The ligatures on the uterine arteries, which were left hanging into the vagina, are allowed to separate naturally. This they usually do during the second or third week. The patient generally makes an easy and uneventful recovery, as if she had undergone an ordinary uncomplicated ovariotomy. Although the operation is a long and tedious one, it is attended with remarkably little shock, provided the patient is kept warm and the intestines are not unduly exposed, handled, or chilled during the operation.

Let me now, in fairness, point out some of the difficulties and dangers of pan-hysterectomy, and some of the objections that have been raised to it:—

(1.) It is a long, difficult, and tedious operation, usually taking over an hour.

(2.) There is the danger of chilling the patient, unduly exposing the intestines, and so adding to the shock.

(3.) There is the danger of one of the ligatures slipping, with consequent internal hæmorrhage.

(4.) There is the danger of tearing the bladder and cutting or tying the ureters.

(5.) There is the danger of adhesion of bowel to some of the raw surfaces left in the pelvis, a danger I believe to be greatly exaggerated.

(6.) There is the danger of infection of the peritoneum through the open vagina.

(7.) There is the danger of weakening of the pelvic roof by the removal of the cervix, and subsequent prolapse—a purely theoretical objection. It does not occur.

I have already indicated how most of these dangers may be avoided.

Let me now compare pan-hysterectomy for myoma with some of the rival operations.

(1.) Removal of the uterine appendages is a comparatively safe operation for small myomata (less, say, than a five months' pregnancy), but I have found it a risky and unsatisfactory operation in cases of large myomata. I have removed the appendages twenty times for small myomata with one death, and eight times for large myomata with two deaths. In about 90 per cent. of those who recover a cure results,—menstruation ceases, and the tumour shrinks. But in the remaining 10 per cent. the patient is *not* cured, the floodings continue, the tumour grows, presses on bladder and rectum, and renders the patient's life a burden to her. It is these failures that shake one's faith in the advisability of removing the appendages for myoma, and lead one to search for some more excellent way. I think that small myomata should be treated by vaginal hysterectomy, and large myomata by abdominal pan-hysterectomy.

(2.) For the treatment of large myomata, hysterectomy with extra-peritoneal treatment of the pedicle (clamp cases) is the favourite operation with most surgeons. To this method there are numerous and obvious objections. It is very risky, being attended by a mortality of 15 to 30 per cent. The patients that do not die escape by the skin of their teeth. They have an offensive necrosing stump, sometimes as thick as the wrist, filling the lower portion of the wound and slowly sloughing off. They run the gauntlet of septicæmia, peritonitis, and secondary hæmorrhage. When the stump separates, a huge suppurating chasm is often left going down to the peritoneum, and separated only by a weak barrier of granulation tissue from coils of intestine. The wound is slow in healing, and it is usually from four to eight weeks before the patient may even sit up in bed. There is a great danger after these clamp cases of a ventral hernia forming at the lower end of the wound. In cases where the myoma invades the broad ligament or the cervix it is often almost impossible to get a safe pedicle when the clamp is used. In all these points pan-hysterectomy is superior to the clamp operation. It cures the patient, it is much less risky, the abdominal wound heals by first intention, the patient is up within three weeks, and there is but little risk of subsequent hernia. For my own part, I have vowed never to use a clamp again.

(3.) Hysterectomy with intra-peritoneal treatment of the pedicle and abdominal myomectomy seem to be attended with such great risks (internal hæmorrhage, suppuration of the stump, peritonitis, and septicæmia) that they are more dangerous even than the clamp operation, whilst they offer no advantages that are not better secured by pan-hysterectomy.

(4.) Vaginal hysterectomy for small myomata compares favourably, as regards mortality, even with removal of the appendages, whilst, of course, it offers an absolute cure. It is not advisable, however, in cases where the tumour is larger than the fœtal head.

(5.) Enucleation per vaginam is usually a risky operation, except for small submucous tumours to which access is easy. It is justifiable in cases of large sloughing submucous myomata. In other cases, however, pan-hysterectomy seems to me to be a sounder and safer operation.

Let me briefly sum up the advantages of pan-hysterectomy. It absolutely cures the patient. It has a lower mortality than the clamp operation, than enucleation, and than the intra-peritoneal method of treating the pedicle. It is attended by but little shock, and the convalescence is easy and uneventful. The wound heals by first intention, the patient is up in about three weeks, and there is a very slight risk of the subsequent formation of a ventral hernia.

Permit me now very briefly to describe the eight cases in which I have performed abdominal pan-hysterectomy.

Case I.—R. G., single, æt. 33, a patient of Dr Pitt's, of Oldbury, came to me suffering from a small myoma of the fundus, enlarged cystic ovaries, and hydrosalpinx. She was a very tubercular subject, lame from old hip-joint disease. She suffered from intense dysmenorrhœa. In February 1893 I removed the uterine appendages without any benefit. In April 1894 I dilated the cervix. As menstruation continued and her sufferings were extreme, I performed pan-hysterectomy, assisted by my brother, Mr Charles Martin, at my private hospital on May 21, 1895. I found the uterus desperately adherent to intestine, and the stumps of both Fallopian tubes were distended with bloody fluid. She was somewhat collapsed after the operation, but rallied well; she was able to get up on the seventeenth day, and returned home on the twenty-seventh day. I saw her about a month ago, and as far as her pelvic symptoms are concerned she was quite cured.

Case II.—M. A. B., married, æt. 53, was sent to me by Dr Lynch of Walsall. She had a history of severe and almost continuous floodings of eighteen months' duration. Two years before, she noticed a swelling in the abdomen, which had since rapidly grown. She was admitted into my private hospital, and on July 15, 1895, assisted by Mr J. F. Jordan, I performed pan-hysterectomy for a myoma which reached above the umbilicus. The tumour weighed 7 lbs. Ovaries and tubes not removed. The patient made an excellent recovery. She got up upon the seventeenth day, and returned home on the twenty-eighth day, and has since remained well.

Case III.—E. P., married, æt. 20, was about three months pregnant. On October 8, 1895, she began to abort, and on the morning of October 9 Dr Wilson of Balsall Heath removed a large mass of "hydatid mole" from the vagina. During the afternoon she became collapsed, having all the symptoms of grave intra-peritoneal hæmorrhage. Dr Wilson then sent for me. I diagnosed infiltration of the uterine sinuses, with myxomatous chorionic villi, perforation of the peritoneal coat of the uterus, and internal hæmorrhage. She was collapsed and nearly pulseless. As speedily as possible I opened her abdomen, assisted by Mr Charles Martin, and performed pan-hysterectomy. The abdomen was full of blood. I did not remove the appendages. Her convalescence was delayed by an attack of phlegmasia alba dolens, but otherwise she made a good, though slow recovery. She was in bed nearly five weeks. I saw her the other day, and she was still anæmic, although otherwise in excellent health.

Case IV.—H. W., widow, æt. 50, was sent to me in November 1893 by Dr Davidson of Coventry. She had then profuse menorrhagia of ten years' duration, and a large soft myoma, filling the abdomen, of six years' duration. I put her on ergot and hydrastis, and advised her to wait for the menopause. She ceased to menstruate in December 1894, but the tumour continued to grow and to cause serious pressure symptoms. The lower half of the tumour also became markedly cystic. I admitted her into the Hospital for Women, Birmingham, and on October 12, 1895, assisted by Dr Edge, I performed pan-hysterectomy. Both broad ligaments were terribly vascular, and about six ligatures were required on each side. The tumour weighed 15½ lbs., and was a cystic myoma. She got up on the twenty-fifth day, and returned home on the thirty-fourth day after the operation. I heard from her the other day, and she is evidently in good health. Both ovaries and tubes were removed with the tumour.

Case V.—F. H., single, æt. 34, was sent to me by Dr Hallwright suffering from a rapidly growing submucous myoma, retention of urine (requiring catheterisation), and menorrhagia. In July 1894 I opened the abdomen and removed her appendages. For a few months menstruation ceased, and the pressure symptoms diminished. They then recurred, and gradually increased in severity. The floodings became alarming, and on several occasions I thought she would bleed to death. Ergot and hydrastis were found to be useless. I admitted her into my private hospital, and on November 5, 1895, assisted by Mr J. W. Taylor, I performed pan-hysterectomy. I found no trace of the appendages. The tumour (which weighed 4½ lbs. after removal) filled the pelvis, so that it was very difficult to reach the uterine arteries and to tie them without including the ureters. The bladder was spread out over the front of the tumour, and reached nearly to the umbilicus. She got up on the twenty-first day, and retumed home on the twenty-fourth day, having made an uninterrupted recovery. She is regaining strength now rapidly.

Case VI.—A. S., married, æt. 34, was sent to me by Dr M'Naught of Birmingham in September 1895. She had complete retention of urine, profuse menstruation, and a cystic tumour (which I diagnosed as ovarian) behind the cervix and filling the pelvis. I admitted her into the Hospital for Women, and on November 14, assisted by Dr Morgan, I opened her abdomen. The cystic tumour I found to be a globular enlargement of the fundus about the size of a five months' pregnancy, which, indeed, it very closely resembled. I incised it, and found it to be a cystic myoma, and I then proceeded to perform pan-hysterectomy, removing both appendages with the uterus. She made an absolutely uneventful recovery. She got up on the fifteenth day, and returned home on the twenty-second day, and has since remained well.

CASE VII.—E. G., married, æt. 26, was sent to me by Dr Cox of Winchcombe, with a history of severe floodings of five years' duration. She had for two years noticed a swelling in the lower abdomen, which had grown rapidly the last three months. I admitted her into the Hospital for Women, and on November 20, 1895, assisted by Mr Jordan, I performed pan-hysterectomy. I removed the right appendages with the uterus, but did not remove the left. The tumour was a multinodular myoma, weighing 6 lbs. She made a slow but uninterrupted recovery. Although at no time had she any serious symptoms, the wound was slow in healing, and she did not get up till the twenty-eighth day, nor leave the Hospital till the thirty-eighth day.

CASE VIII.—E. R., single, æt. 19, a delicate, anæmic girl, was sent to me by Dr H. Brown of Coventry. She had an occluded cervix, moderate distension of the fundus with menstrual fluid (hæmatometra), and double pyosalpinx. I admitted her into my private hospital, and on December 12, 1895, assisted by Dr Morgan, I operated. I first tried to reach the uterus per vaginam, and failed. I then opened the abdomen, and performed total extirpation of the uterus and both ovaries and tubes. The bladder was, unfortunately, wounded to a slight extent, and required suturing. The patient suffered from severe shock after the operation, and required free stimulation. She rallied well, however, and has since made a good recovery. She is now (January 8) getting up, and will return home in a few days' time.

Let me briefly summarize the above eight cases. There were six cases of myoma. Of these, one (Case I.) was small, and the rest were large tumours. There was one case of hæmatometra with pyosalpinx (Case VIII.), and one case of perforation of the gravid uterus by a hydatid mole (Case III.). This last case is, I believe, the only one on record in which this very rare condition has been diagnosed and successfully treated by surgical operation. In two cases (Case I. and Case V.) I had previously removed the uterine appendages, but without any benefit to the patient. In two cases (IV. and VI.) the myoma was cystic. Three of the cases were operated on at the Birmingham Hospital for Women, four in my private hospital, and one at the patient's own house. Several of the patients were unfavourable subjects for a severe operation. Cases I. and VIII. were delicate, strumous subjects. Case V. was profoundly anæmic, and exhausted by chronic hæmorrhages; and Case III. was collapsed, and nearly moribund from acute internal hæmorrhage. I therefore feel I am fortunate in not having to record a single fatal case.

Part Second.

REVIEWS.

Text-book of General Pathology and Pathological Anatomy. By RICHARD THOMA. Translated by ALEXANDER BRUCE, M.A., M.D. Volume I. London: Adam & Charles Black: 1896.

MEDICAL men in general, and pathologists in particular, owe much to Dr Bruce for giving to English readers Thoma's valuable Text-book of Pathology, and for the able manner in which the work has been performed. To write a book on a subject dear to the author is a pleasure; to translate a work of the size of the volume before us must require the most dogged determination. With commendable modesty any preface by the translator has been omitted; perhaps he holds that any apology for the appearance of the volume is unnecessary, and we are inclined to agree with him there.

The volume commences with the general considerations applicable to disease, etiology, and heredity, that popular and much-vexed question, which is treated in a very guarded fashion. Trauma, its effects, and the regeneration of tissues are considered. The chapters on Infections and Parasites are particularly good. Not only do we get full and up-to-date information on the life-history of the schizomycetes, but the histological methods of demonstration and cultivation are discussed with clearness. Next comes a chapter on Malformations, the diseases of the fœtus and their bearing on the etiology of disease, which is fully illustrated with drawings of the most gruesome monsters.

Section II., on the Elementary Forms of Disease, begins with disturbances of the circulation, and it is here that the author is found at his best. The section contains much original work, and an extensive knowledge of physics and mathematics is brought to bear on the different problems presented to the reader. Though some of the conclusions are not altogether free from objection, the subject is fully and admirably treated.

Chapter IX. deals with the retrogressive and progressive changes in the tissues, the former including the various degenerations and death, while the latter discusses the new formations in the different tissues.

In the third section of the volume we have the combined forms of disease, in which are grouped inflammations of organs, tumours, and general diseases. All through the volume the references to other workers in the field of pathology are liberally given. At the end of each chapter a list of literature on the subject-matter is appended. The volume is illustrated throughout most lavishly with plates and drawings taken from original preparations made by the author. They are well executed, illustrate the text with clearness, and bear the stamp of having been drawn from morbid preparations and not evolved in the study from the imagination of the author.

Though the volume is too large ever to become a text-book for the student working for examination, it will form a most valuable book of reference for the senior student and practitioner. It is not every translated work that makes a readable book and does not lose in the translation, but Dr Bruce is to be congratulated on giving us a volume that can be read with pleasure.

The book forms the conclusion of Professor Thoma's work in the University of Dorpat. It should stand as a lasting monument of his industry and ability as a teacher.

Quain's Elements of Anatomy. Tenth Edition. Edited by Professor E. A. SCHAEFER and Professor G. D. THANE. Vol. III. Part II.: The Nerves; by Professor Thane. London: Longmans, Green, & Co.: 1895.

THE tenth edition of this standard work on Human Anatomy is gradually approaching completion. It might, not unnaturally, be supposed that this part, dealing as it does simply with the cranial, spinal, and sympathetic nerves, would not present many changes when compared with the previous edition, but a careful study of its contents will show that such is not the case. Owing to the labours of a band of able investigators, chiefly British, our knowledge of the peripheral nervous system has been considerably extended within the last few years in two main directions. In the first place, the morphological and experimental investigations of Gaskell, Sherrington, Paterson, Herringham, Langley, and others have profoundly modified our views as to the relation of the spinal and sympathetic system of nerves; and, secondly, the clinical and pathological observations of Head, Starr, Ross, Mackenzie, and Thorburn have rendered our knowledge of the cutaneous distribution of the various spinal nerves much more exact, and have thrown valuable light on the relation of sensory disturbances in the skin to visceral disease. Professor Thane has made himself thoroughly familiar with the work of these investigators, and summarizes their results in a very clear and lucid manner. Numerous new illustrations have been introduced, especially to show the areas of cutaneous distribution of the various spinal segments.

The limits of our review will not admit of a detailed examination of the various points in the anatomy of the nerves, which might be regarded as of special scientific or practical interest, but brief reference may be made to a few of them.

In common with the great majority of anatomists, Professor Thane describes twelve pairs of cranial nerves, and discards the plan so long followed in this country of recognising only nine pairs. The fibres of the facial nerve supplying the frontalis, orbicularis palpebrarum and corrugator supercilii, are stated to arise, in all probability, from the nucleus of the third nerve, and those going to the orbicularis oris from the hypoglossal nucleus. With reference to the supply of the levator palati and azygos uvulæ, the experiments of Beevor and Horsley are mentioned as supporting the view that the fibres for these muscles come from the spinal accessory. The hypoglossal is said to supply the muscles of the tongue, but not the depressors of the hyoid bone, the latter muscles being innervated by the upper spinal nerves. The conclusions of Head, based on clinical observations, regarding the sensory distribution of the various dorsal spinal nerves to the skin of the trunk, are in the main adopted, and his illustrations, which originally appeared in *Brain*, are reproduced. There are good reasons for believing that the thoracic and abdominal viscera are supplied with sensory fibres, which come from the spinal nerves and pass through the sympathetic. The "referred pains" met with in cases of disease of the viscera are due, according to Ross, to the diffusion to the adjacent somatic centre of the irritation conveyed by the visceral fibres to their corresponding segment of the spinal cord. The clinical value of a knowledge of the areas of distribution of the sensory portion of the various spinal nerves is thus very obvious. The nature of the modifications in the typical arrangement of a spinal nerve, which occur in the position of the limbs, has engaged the attention of numerous morphologists, and it is worthy of note that while Paterson, Eisler, and various other recent writers consider that the limb-nerves represent the whole of the anterior primary divisions of the spinal nerves, Thane supports the view of John Goodsir, that they represent greatly developed lateral perforating branches of the nerves.

Diphtheria and its Associates. By LENNOX BROWNE, F.R.C.S. Ed., Senior Surgeon to the Central London Throat, Nose, and Ear Hospital; late President of the British Laryngological Association; Corresponding Fellow of the American Laryngological Association. London: Baillière, Tindall, & Cox: 1895.

CURRENT medical literature has for many years past devoted such an amount of space to reports and papers dealing with diphtheria, that the ordinary reader has not time to read and digest all that is being written on the subject. It is, therefore, a great advantage to have placed before us at the present time a critical exposition of our present knowledge of the dread disease and of the recent advances that have been made by the aid of bacteriology. Dr Lennox Browne has undertaken this task; and those who know his previous writings do not need to be told that in appearance, in language, and in general arrangement his book leaves little to be desired. It does not propound any new or original views, but may be looked upon rather as a critical review of the subject.

The book commences with a short chapter on the history of diphtheria prior to the discovery of the specific organism. Its etiology is considered in the next three chapters, which are devoted respectively to the predisposing causes, the bacteriology, and the toxic products of the diphtheria bacillus and its associates. Those who are not familiar with the methods of examination employed will find a useful chapter on bacteriological diagnosis, while Chapters III. and VIII. will be found to contain excellent coloured plates which will assist the reader to recognise not only the characteristic diphtheria patches, but also the Klebs-Löffler bacillus and other micro-organisms often found associated with it. Other chapters are devoted to the diagnosis, treatment, prognosis, hygiene, and to illustrative cases and formulæ.

The treatment of diphtheria by serum being still on its trial is considered by itself in an Appendix, and to this our readers will doubtless turn with some interest and expectation, though, we anticipate, with some disappointment. The author takes for comparison 100 cases treated in a London Hospital with antitoxin in contrast to 100 cases treated without serum in the same Institution in the previous year. It is not clear whether all these cases were personally seen and watched by Dr Browne, or whether he has merely taken the histories and results from the hospital records. We cannot follow the writer through all his analyses of these cases. It is sufficient to say that the conclusions he arrives at point to no decrease of mortality under the serum treatment, while he finds that its use is associated with marked increase in some of the recognised complications of the disease. It is, we think, to be regretted that under this head the views and experiences of other observers should not have been given with greater detail. The value of the conclusions which the author draws from his own tables depends greatly on whether the parallel series of cases were in almost every respect similar, except with regard to the use of the serum. There is also reason to believe that much of the serum used in the earlier days of the treatment was by no means always reliable, and this may be a source of fallacy. Before adopting the results obtained by Dr Browne, we should like to see a much larger series of cases tested side by side under as nearly equal conditions as may be possible, and that the preparation of serum which is found to be most active and reliable should be selected for the experiment. Those who still keep an open mind on this subject, but hope that in antitoxin we may find a real and active remedy against diphtheria, will find a straw of comfort on page 262, where the author says—"Our own observations record an improved mortality in nasal and laryngeal diphtheria, with a diminution in death from mechanical obstruction."

Mental Physiology, especially in its Relation to Mental Disorders. By THEODORE B. HYSLOP, M.D. London: J. & A. Churchill: 1895.

IN the introduction to his book Dr Hyslop discusses various hypotheses as to the nature of mind and its relation to the brain, which we pass over, only repeating his warning: "Many of the existing psycho-physical formulæ are the results of unsafe hypotheses within the domains of psychology and physiology respectively. The student will find that the blind ends of physiology and psychology are covered respectively by unverifiable hypotheses."

In the first chapter he describes the structure of the brain substance and the different characters of cells and nerve fibres, and the functions which microscopists have been pleased to assign to them. It is still doubtful whether nerve cells have simply nutritive functions, or serve for the transmission of nerve impulses, or whether the giant cells have got their size by their place and their age, or whether their function is to influence the larger group of muscles, or whether the nerve cells are connected with one another. The functions of the cells of other patterns are still more obscure. It is not perhaps Dr Hyslop's fault that his summary of what is known about the chemistry of the brain and nerve substance will be taken up with difficulty and easily forgotten; but his description of the vascular supply of the brain affords grounds for reflection for the physician and surgeon. His observations on the circulation in the brain and the relation of the pressure of the cerebral fluid to the blood supply are given in a masterly manner. In the chapter on cerebral localisation the author shows a watchful critical power, and our knowledge of what is often called the "brain centres" or "spheres" is brought down to a small and uncertain amount.

In the chapter on the theories of mind, sensation, perception, attention, memory, the emotions and the will, Dr Hyslop shows much philosophical power. He takes nothing on mere authority, and shuns no question, however difficult, though he sometimes quotes the opinions of other writers when he thinks them happily expressed. It is customary in English works on psychology to keep wide of some questions, such as the relation of the mind to the brain, which nevertheless must ever excite interest, but Dr Hyslop has no such timidity. He also deals at length with the question of the functions of the double brain, which psychologists so often avoid.

The chapter on the will is remarkably well written. He observes that "It is just the conscious selection of the most appropriate reaction to circumstances, and the voluntary activity thereby involved, that constitutes what is known as the will."

We naturally expect that the author will take advantage of his opportunities at Bethlem and other asylums in treating of sensory perversions and hallucinations; nor are we disappointed. In handling these difficult subjects the author shows a ripe knowledge, with originality and justice of view.

The last two chapters are on the causes of idiocy and insanity, in which he sustains the same high level of thought and writing. Where he treats of "external factors," social environments, mental epidemics, children's pilgrimages, sorcery, and religious impostors, he has evidently often consulted the original sources, which is rarely done by those who mention these matters in treating of insanity. At p. 489 he tells us:—"The assumption of divine power by John Nicolls Thom in Cornwall was followed by confinement in an asylum, but not until his exhortations and denunciations had induced an enthusiastic fervour amongst his vast concourse of deluded followers." Here Dr Hyslop's knowledge fails him. John Nicolls Thom was indeed born in Cornwall, and confined for some time in an asylum, but it was in Kent that he led his band of deluded rustics against the military, when he, with six of his followers, was shot dead.

If we were asked to point out any portion of the book less carefully done, we should mention that on illusions in dreams, which is mainly taken from one book. The diagram intended to show the successive phases during sleep, which he borrowed from Lyman, who borrowed it from a French medical dictionary, seems to us constructed upon unproved assumptions. Dr Hyslop observes, that "the general paralytics who say that they have walked millions of miles (hyperkinæsthesia), or who feel that they are treading on air, have probably some change in the sensibility of the articular surfaces, which act in reality as predisposing factors of illusory states. The sensations of flying through the air, of extreme buoyancy, or of having leaden limbs, difficult movements, etc., may all be explained from this point of view," but the talk of walking millions of miles is due to the exaggeration and the want of measure in the mental faculties of general paralytics. The sensation of flying is not uncommon in the dreams of healthy people, and has been better explained as the result of changes in the general sensibility and the respiration. This is the very explanation which Dr Hyslop gives for the subjective sensation in which the body seems to shrink or expand. But we have found very little in this book with which we can disagree, nor is there anything of importance bearing on mental physiology which is not considered. If in some parts it seems difficult to read, this is mainly owing to the obscurity of the subject, and those who study the work carefully will find that their time and attention have been well bestowed.

The Diseases of Children's Teeth; their Prevention and Treatment. A Manual for Medical Practitioners and Students. By A. Denison Pedley, M.R.C.S., L.D.S. Eng., and F.R.C.S. Edin. London: Segg & Co.

The author in his prefatory remarks very justly observes, that while children form a large proportion of the patients in all country districts, and, consequently, a considerable amount of dental treatment is demanded at the hands of the provincial medical man, little time or opportunity has been afforded him during his student days for becoming acquainted with this particular branch of surgery. This is an important consideration, not only as limited to the dental diseases of childhood, but as regards the necessity for better facilities being afforded for medical men becoming acquainted with the proper treatment of such affections at *all* ages. Our Dental Hospitals and School seem unwilling or unable to offer such instruction, and the only alternative appears to be the establishment of Dental Teaching in all general Medical Institutions. The book under notice is in this way a serviceable addition to the existing works on special surgery. It contains an excellent *résumé* of the facts of dental structure and development; of the nature and progress of caries and other dental disorders, such as inflammation of the tooth pulp, and periodental tissues; alveolar abscess, necrosis, and other diseases. Those portions appealing more particularly, however, to the attention of medical men will be found in the chapters devoted to Irregularity, to Oral Hygiene, and to the remedial measures best suited for the various phases presented by morbid conditions of the dental organs. It is unnecessary to state that the details and minutiæ of various modes of treatment are not given, as would have been the case had the work been intended as a text-book for dentists pure and simple. But while much of its teaching would be of interest and advantage even to the specialist, there is contained in its pages a large amount of information which will be found acceptable and most serviceable to general practitioners in such districts as those where the doctor has to rely upon himself for discharging the duties of the oculist, the aurist, or the dentist, as the circumstances may require. The subjects are further elucidated by a number of excellent illustrations.

The Diseases of Children, Medical and Surgical. By Henry Ashby, M.D. Lond., F.R.C.P., and G. A. Wright, B.A., M.B. Oxon., F.R.C.S. Eng. Third Edition. London: Longmans, Green, & Co.: 1896.

We welcome with much pleasure the third edition, within six years, of this admirable compendium of children's diseases, by the Physician and Surgeon to the General Hospital for Sick Children in Manchester. In one thick handy volume we have an enormous amount of well-digested information on the whole subject of diseases of children. Thoroughly revised, and in some sections almost entirely re-written, this edition is up to date. Fifty new pages have been added, and fourteen new woodcuts inserted. The formulary has been much expanded. It is a credit to the Manchester School, in which both the authors have been and are distinguished teaching members.

Annual of the Universal Medical Sciences. A Yearly Report of the Progress of the General Sanitary Sciences throughout the World. Edited by CHARLES E. SAJOUS, M.D., and seventy Associate Editors, assisted by over two hundred Corresponding Editors, Collaborators, and Correspondents. Illustrated with Chromolithographs, Engravings, and Maps. Five Volumes. Issue for 1895. Philadelphia, New York, and Chicago: The F. A. Davis Company. London: F. J. Rebman.

THIS eighth issue of this most valuable yearly work has been unduly delayed. This delay is explained, if not justified, by the editor in his preface, in which he mingles praise and blame with such courtesy and gentleness that even the worst offenders, whose names are not given, must feel they have been let down easily. In referring to the changes in the editorial staff, the editor welcomes and praises some new hands, such as Professor Wilson of Philadelphia, Professor Landon Carter Gray of New York, and Professor Obersteiner of Vienna. An exquisite little tribute to the memory of Dr Dujardin-Beaumetz adorns the preface, in which is quoted a sentence from R. L. Stevenson's tribute to the physician.

In these days of wars and rumours of wars, distress of nations, and perplexities, it is refreshing to turn to works like this, in which every nationality is represented by our noble profession, and in which it is manifestly shown that our races unite in doing good, and the only racial jealousies are those of men trying to be foremost in advancing the cause of healing the sick and preventing disease. There is no Monroe doctrine in medicine. Our brethren in America welcome without jealousy any advance in surgery or medicine which may start in the effete old absolutist kingdoms of Europe, or even in the little island out of whose loins the great United States nation has sprung. We in Europe must allow that in power of original work, and especially in the great laborious duty of systematizing the literature of the world of medicine, the Americans are far ahead of us. We wish the success to this great work it so thoroughly deserves.

Outlines of Practical Physiology. By Professor STIRLING. Third Edition. London: Charles Griffin & Co.: 1895.

THAT this work should have reached a third edition in the course of so few years shows the great advance that is taking place in the teaching of physiology, and how the more valuable teaching by practical study is replacing the older system of teaching by lectures and demonstrations.

Prof. Stirling's book is intended to be a guide to students who are performing the analyses and experiments in order to familiarize themselves with physiological truths. It is not full enough nor sufficiently accurate to be of use to investigators. As a guide for students its success proves its value. In it there is to be found all that they require, and the many and excellent illustrations will be of great assistance to them in arranging their experiments. This educational value would have been much greater had the author used more discrimination in selecting methods, and had he omitted those which have been abandoned as useless. The book is overburdened with them. This fault is specially noticeable in the chemical section. What good can a student obtain from knowing five varieties of apparatus for estimating urea by means of hypobromite solution, or from practising extinct methods such as Bernard's, for estimating sugar in blood, and Schmidt's, for separating serum globulin?

We trust, for the sake of the medical student, that in a future edition the book will be curtailed in the manner suggested, as this would not only shorten the course, but would also bring the essential facts into emphasis, and so would better fulfil its function as a guide.

Elements of Practical Medicine. By ALFRED H. CARTER, M.D. Lond., F.R.C.P., Senior Physician to the Queen's Hospital, Birmingham, etc. Seventh Edition. London: H. K. Lewis: 1895.

THE present edition of this little work on Medicine, which is designed to be a simple introduction to the study of more ambitious systems, is the seventh within fifteen years. The book requires little more recommendation than this fact. The present edition is in the same form as that of the sixth, but has been subjected to careful revision and considerable enlargement.

The section dealing with the diseases of the integumentary system has been supplied by Malcolm Morris, F.R.C.S.E. There is no doubt that, as a rule, students obtain more good from reading such a book as this, where everything is put shortly and clearly, than from the larger text-books in which a wealth of detail often obscures, for beginners, the mental pictures of disease. We note that several additions of some importance have been made to this edition; for instance, myxœdema, which was not even mentioned before, now receives a separate notice. Acromegaly, on the other hand, is still unnoticed. None of the other books designed for the same purpose have met with so much success—a success fully merited—as Dr Carter's *Elements*.

The Year-Book of Treatment for 1896. London : Cassell & Co., Limited.

THE twelfth issue of this excellent publication promises to fill as useful a position as its predecessors. Opening with the consideration of the diseases of the heart and circulation, the discussion on Cardiac Therapeutics at the Medico-Chirurgical Society of Edinburgh, which appeared in these pages, is largely drawn upon ; considerable attention is also devoted to the Nauheim treatment. In the section on respiratory diseases there is an interesting account of observations by Vaughan on the production of immunity against the diplococcus pneumoniæ by the injection of nuclein.

The section on diseases of the stomach, intestines, and liver has been this year entrusted to Dr Hale White. Neither it nor the section on kidney diseases contains anything very striking. Surgery is fully represented, and some striking and interesting results are given in abdominal and cranial surgery. Murphy's button seems to have had its day, and to be falling into ill repute. A new section is added dealing with tropical diseases.

The volume is larger than its predecessors, and promises to be even more useful.

Food and its Functions: A Text-book for Students of Cookery. By JAMES KNIGHT, M.A., B.Sc., F.C.S., F.G.S., Lecturer in Physiology and Hygiene, High School of Glasgow, etc. London : Blackie & Son, Limited : 1895.

IT is one of the signs of the times that the oldest of the arts, cookery, is becoming more and more of a science. Unluckily the science of the art has only reached, up to the present, the sex which is less concerned with food preparation, the sex which thinks more of the prospects of the next meal than of the history of the last. Although this volume is termed a text-book, it is really a series of lessons on the chemistry and physiology of foods and their digestion. These lessons are of the most admirable character; if anything, they are too full of important facts. We have never come across a book in which so much knowledge is accurately expressed in so short a space. There is hardly a page through the volume from which the housewife, not to speak of the physician, might not learn something of importance. To notice all the subjects treated of by the author would be an endless task. The physiological chemistry of foods and their ultimate constituents are fully treated of in the first ten lessons. We are glad to see that notice is taken of the fact that beef-teas are stimulants, not nutrients. The next thirteen lessons are devoted to an excellent exposition of the fate of the food in the body. Part III. consists of a description of the different foods in detail, and in it many facts of interest are included. The last part of the book treats of dietetics, and is as well worth perusal as the earlier portions.

Diet in Sickness and in Health. By Mrs ERNEST HART, formerly Student of the Faculty of Medicine of Paris, etc. With an Introduction by Sir HENRY THOMPSON, F.R.C.S., M.B. London. London: The Scientific Press, Limited: 1895.

THE value of this interesting little book would be much enhanced if the more ambitious parts had been left out. Some knowledge of the culinary art is of more value to the physician than much of the erudite zoological and botanical lore which is at present forced upon the student; indeed, although the idea might appear rather *outré*, a legitimate sphere for an "old" woman, in contradistinction to the "new" species lately discovered, might be found in the establishment of a professorship for the teaching of cookery, ordinary and medicinal, to medical students.

We are afraid that the accomplished authoress of this book has made the common mistake of appealing both to the profession and to the public at one time. Much of its substance can be read with great benefit by both. A great deal of it is beyond the comprehension of the multitude, and still more is commonplace to the physician.

We will only note one physiological error into which the authoress has fallen. She teaches that peptones and albumoses are absorbed by the intestinal tract and taken as such to the liver; while it is well known that they never enter the blood current in any other form than in that of albumen or globulin, this change taking place in the intestinal coats.

So much for adverse criticism. Concerning the different recipes and diets for different diseases we have nothing but praise. The varied diets for the diabetic and the gouty, with different *menus* for each day in the week, are of the utmost value, and many extremely useful hints may be gleaned by the physician, perplexed by the difficulty of stimulating the appetite of such patients when on restricted diets.

Lewis's Nursing Chart.

THIS is a simple but ingeniously framed chart, on which every hour of the day has its own line. Each page contains one day, beginning at 9 A.M. In each line are spaces for the hourly record of pulse, temperature, urine, bowels, sleep, stimulants, medicine, milk, and food. A large column is kept in which orders can be written for food and medicine to be given, and another column in which the nurse may write remarks. The risk of such grand charts is that the patient may be over-nursed and never get a chance of sleep from frequency of attentions. The idea, however, is a good one, and well carried out.

Report on the Health of Montrose for the year 1895. By S. LAWRENCE, M.D., Medical Officer of Health.

AS usual, this report is well worth reading. It is full of sense, and in a very remarkable way is impressive by the originality and optimism of its author. The mortality of the burgh is slightly decreased, but still stands at 20·7 per 1000 of estimated population.

The town in 1895 enjoyed an almost entire immunity from infectious disease,—one death from scarlatina, and none from hooping-cough, measles, diphtheria, and small-pox.

A short notice of bacteria as causes of disease is prelude to an admirable warning as to the advantage of sunlight and fresh air, which is fixed in a neat proverb into the memory of the reader by the quotation that "the pestilence walketh in darkness."

Chemists' Vest-Pocket Diary and Ready Reference, 1896. London: Burroughs, Wellcome, & Co.

THIS Diary is excellent, and contains much valuable information for chemists and druggists. They will also find in it much information about the actions of many of the newer remedies, including the "utilisation of animal substances in the treatment of disease."

Part Third.

MEETINGS OF SOCIETIES.

MEDICO-CHIRURGICAL SOCIETY OF EDINBURGH.

SESSION LXXV.—MEETING IV.

Wednesday, January 15, 1896.—Dr ARGYLL ROBERTSON, *President, in the Chair.*

I. ELECTION OF MEMBERS.

THE following gentlemen were elected Ordinary Members of the Society:—William A. J. Alexander, M.A., M.B., 13 Gayfield Square, and William Tasker Lundie, M.D., M.A., B.Sc., 3 Glengyle Terrace.

II. EXHIBITION OF PATIENT.

Mr Caird showed a boy who had fallen from a height of one storey, landed athwart a barrel, and ruptured his urethra. All attempts to pass an instrument had failed. On the following morning his bladder was aspirated, and he was then sent from the extreme north of Scotland to the Infirmary, where he arrived late at night. The perineum was bruised, and distended with coagulated blood, but there was no evidence of extravasation of urine. Blood was passed from the urethra. Mr Caird thought there would be great difficulty in getting an instrument in. He cut down on a staff, but failed to find the urethra. Everything was such a mass of pulp that it seemed best to open the bladder above the symphysis. Having done so, and projected an instrument into the perineum, he then pulled through a red rubber instrument, stitched up the bladder, and then stitched up the external wound. For three days there was a slight urinary discharge in the dressing, but on the fourth day it had ceased, and they had union of bladder wound and of external wound by first intention.

III. Exhibition of Specimens and Gelatine Cast.

1. *Dr W. Elder* showed—(*a.*) The BRAIN from a case of old-standing aphasia. It was almost entirely a case of sensory aphasia. When the patient came under observation she was semi-comatose. The aphasia dated back to seventeen years ago, when she had a shock of paralysis about fourteen days after childbirth, in all probability of embolic or thrombotic origin. The paralysis involved the whole of the right side, leg, arm, and face, along with aphasia, but passed off very soon. In a few weeks it had almost disappeared, and in seven or eight months there was nothing left but aphasic symptoms. Nine months afterwards, however, mental symptoms showed themselves, and she was admitted to Morningside Asylum, where she was very closely observed, kept there for a fortnight or three weeks, and then sent to Larbert, where she recovered from her mental symptoms, but not from the aphasia. About five years ago she was again admitted to Morningside, having been found wandering about the street unable to give an account of herself, and was again carefully observed. Three years ago she had an epileptic fit, and three weeks before admission to Leith Hospital she had headaches and vomiting, and became comatose. She was admitted comatose, showing all the symptoms of a congestive attack so common in these brain cases. The symptoms shown in Morningside Asylum were limited almost entirely to the sensory side of the speech centres. She had paraphasia, *i.e.*, she could speak words, but could not converse intelligibly, used all sorts of words, but not the proper words. Her vocabulary as regards correct speech was limited to "yes" and "no" and a few simple expressions. She could not name her friends, husband, or the days of the week, but indicated them by signs. The hearing was perfect for sounds, but for words very imperfect indeed. She could understand the sentence "I am," but not "I am going out." She had also word blindness. She was previously a great reader, but since her attack could not read a book. She could recognise names of familiar friends in writing, but not such a word as "pain." She could check errors in butchers' and bakers' bills. A half loaf having been sent where a whole loaf was charged, she checked it at once. She could not sum up figures, although previously a good arithmetician. She was unable to write spontaneously, but could copy quite well. On her admission to the Asylum the facts stated on her certificate

were that she was unable to give an account of herself, unable to give her name; had obstinate taciturnity; talked incoherently. The brain in this case was all normal except the first and second temporo-sphenoidal convolutions, which were almost entirely gone, completely atrophied, leaving only the lower temporo-sphenoidal. The marginal gyrus was slightly affected, thus explaining the visual affection. She died from an attack of congestion, and the atrophied part was found full of clear fluid at the post-mortem.

(*b*.) A specimen of HYPERTROPHY OF THE BLADDER WITH DILATATION OF THE URETER, FROM STRICTURE OF THE URETHRA. It was very difficult to explain the dilatation of one ureter. It had possibly arisen from weakness in its wall or the lodging of a calculus in it so starting the dilatation. Three small calculi were found in the bladder. The patient was admitted for uræmia, and died from it without giving any indication of this dilatation of ureter and pelvis. The ureter itself was very much dilated, but the pelvis did not appear to be dilated in proportion. It was rather difficult to make out where the pelvis ended and the ureter began. The kidneys showed consecutive Bright following a purulent condition.

2. *Dr Boyd* showed a specimen of ANEURISM OF THE AORTA WITH RUPTURE INTO THE LUNG. The patient got up one Sunday morning apparently in perfect health, but was afterwards found half out of the bath and bleeding from the mouth. When got back to bed he was dead. He (Dr Boyd) made a post-mortem, and on opening the chest found the whole of the left pleura adherent. There was an enormous aneurismal dilatation of the aorta. At the descending part of the arch the aneurism had perforated through the two layers of the pleura into the lung, and there was a small hole leading into a bronchus. There was very marked atheroma of the whole of the aorta. The peculiar points were, first, that the patient had absolutely no symptoms, was apparently in perfect health up to the time of death,—he had not been seen by a medical man for fifteen years; secondly, the small amount of hypertrophy of left ventricle in spite of a certain amount of aortic incompetence; and, lastly, the adhesion of the whole of the pleura without any symptoms, and the aneurism passing through the two layers into the lungs without any sign. There was no history of syphilis.

3. *Mr Greig* showed a GELATINE CAST OF A CASE OF LUPUS VERRUCOSUS. The cast had not been taken on account of any inherent peculiarity in the disease itself, but simply because he thought it interesting to try whether it was possible to bring out the absolute detail, as Mr Cathcart claimed. The case presented many points of interest. It was an affection of the forearm and hand of a female, aged 11, whose family history was good. She stated, and her mother corroborated the fact, that the disease had

lasted for about five years, and she thought it had commenced on the back of one of her hands. It was worse in winter, better in summer. She had been in Dundee Royal Infirmary twice; and to Dr Stalker he was indebted for permission to take the mould. The rash was most marked on the dorsal aspect of hands, wrists, and forearms. There was a patch of lupus verrucosus on either cheek, also on dorsum of both great toes, inner borders of both feet, inner aspect of heels at insertion of tendo Achillis, and on an area over the patellæ, on inner aspect of each knee, and above and below the gluteal folds, on the latter situation quite small in amount. The cast showed other details of the case worth noticing. First the skin itself presented a dull opaque condition with a considerable amount of scaly epithelium, more like a branny desquamation. All over the affected limbs there was an eruption of small papules very well shown on the cast. These were pinkish, and many of them had their tips rubbed off or broken down, probably not due to scratching, but simply to friction against clothes. Around the verrucose areas the skin was of unnatural pinkness, shown very distinctly, but not exaggerated, on the cast. Certain parts on the dorsum of the hand were raised, and formed the verrucose patches which gave the disease its name. On other parts of the limbs the verrucæ had a peculiar flattened form, or formed a desquamating, slightly raised areola round about a more or less cicatricial area. These were the points worthy of notice which he thought he might claim that this "Cathcartine" cast showed very distinctly.

IV. Original Communications.

1. *Dr Noël Paton* read his paper on THE ACTION OF THE LIVER ON FATS, of which the following is an abstract:—

Dr Paton pointed out that the old idea of the liver being simply a digestive gland had been exploded by Bernard, and that all subsequent work had confirmed his conclusion as to the relationship of the liver with the metabolism of the carbohydrates. Its connexion with the metabolism of proteids had also been demonstrated. But while the liver is in the channel of absorption of these substances, it is not in the channel of absorption of fat. Has it, then, any special connexion with the metabolism of fat?

At present evidence on this point is wanting, and the object of these observations is to elucidate the subject. The want of information is probably due to the tedious character of the experiments required and to the difficult and lengthy analyses involved.

The method of estimating the liver fats was first considered, and and it was pointed out that the ether extract contains only about 57 per cent. of fatty acids,—the essential constituent of the fats,—instead of the 90 or 92 per cent. found in the ether extract of adipose tissue. Hence all conclusions based upon the mere estimation of the ether extract are valueless. The fatty acids must be determined.

Various questions of purely physiological interest were passed over, and attention was next directed to the chief combination of the fatty acids in the liver—Lecithin. Its chemical nature was considered, and its relationship to phosphorus pointed out. It constitutes on an average 2·35 per cent. of the liver and about 10 per cent. of the solids. About half of the fatty acids are normally combined in this substance. The significance of its occurrence in such large amounts was considered. The part played by lecithin as the source of phosphorus for the bone and nucleins of the growing embryo was pointed out, and it was submitted that the lecithin of the liver performed a similar function, combining with phosphorus as a first step to the formation of nucleic compounds.

The influence of different conditions on the fatty acids of the liver was next dealt with, and it was shown by experiments on kittens and pigeons that the normal average amount of fats was not diminished even after four days' starvation. The question of why the store of fat should be maintained in the liver was considered, and it was suggested that its purpose is to combine with the phosphorus produced by the decomposition of nucleins, and to prepare it for use again in the protoplasm.

It was shown by experiments of feeding kittens upon cream that the fats are stored in the liver, and that the excess of fats is only got rid of after about sixty hours.

Experiments were also described which indicated that carbohydrate food increases the fats of the liver. The possible formation of these fats from glycogen was considered, and it was shown that as the glycogen disappears there is an *actual* increase in the amount of fats. Since this is an increase of the characteristic fats of the liver, and since the blood serum manifests no milkiness, the fats would appear to be actually formed by the liver protoplasm from glycogen. This does not exclude the possibility of the liver also forming sugar from the same source.

The question of fat formation from proteids was discussed, and it was shown that proteid food did not lead to an accumulation of fats in the liver.

The President said he would be glad to hear members speak on this communication, which dealt with a subject on which great diversity of opinion existed, and the nature of which remained, he might be allowed to say, a little obscure. He would be glad to hear those who could speak with authority on these points.

Dr Gibson said that he made no professions at all in the matter of physiological chemistry, but thought there were a great many points in this paper of interest to the practical physician. He asked Dr Paton how, if lecithin, built up as it was, were stored in the liver, there should be such a tremendous disappearance of the tissues of the liver in cases of phosphorus poisoning. No doubt there was storage for the time being of fat in the liver, but only as a half-way house. With regard to the storage of fat in the liver, Dr Paton's observations ran counter to some of the teaching which had almost become current coin, *i.e.*,—the teaching of Oertel and others, who made it their duty to restore a graceful form to those unfortunate members of society affected with a tendency to obesity. He almost feared, in the present state of matters, to say anything at all about the relation between the carbohydrates and the fats of the liver, because, if Dr Paton would allow him to say so, owing to the strained relations between London and Edinburgh on such subjects, it was rather a dangerous subject to take up at all. He had always believed that from the carbohydrates which were absorbed fats were formed and deposited, and Dr Paton had brought before them facts that certainly proved that point; but in regard to the relationship between the storage and absorption of glycogen and the transformation of carbohydrates into fat going on in the liver, he thought perhaps the practical physician might be a little aided if Dr Paton would in his reply give them one or two more practical deductions. The tables shown by him had passed too rapidly for them to catch all the facts. The only other point he might refer to was that his observations with regard to the relation between proteids and the storage of fats in the liver amply confirmed what in practical life they had been long accustomed to, —viz., that out of proteids there was but little fat absorbed and deposited. Such were the points that from the point of view of the practical physician emerged from this paper, and he would only like to express the extreme gratification and pleasure with which he had listened to it.

Dr J. C. Dunlop said they had listened to a vast amount of new material in contradiction to the text-books. What struck one most was that the amount of lecithin was vastly greater than all previous statements, and also the effect of hunger. He (Dr Dunlop) had made observations on the quality of fat to be met with in degeneration and infiltration, but could not find any essential difference between the two. He found in three fatty infiltrated livers that the melting-points of the fatty acids were 8, 27, and 34; in two degenerated livers, 16 and 27. It seemed there was no chemical difference between the fats of the two diseased livers.

Dr Lovell Gulland said there was only one point in Dr Paton's paper that he wanted to draw attention to, because most of it was really far beyond any one who was not a physiological chemist. It seemed to him that the interesting point, so far as he made it out, in Dr Paton's paper was the *rôle* of the liver in keeping a balance of phosphorus for the nuclear compounds of albumen. It was a suggestion which was new to him (Dr Gulland), and, he thought, was new altogether. One would not have supposed that the liver, whose energies, one would have thought, were fully taken up in other directions, should have laid itself out to store phosphorus for the nuclei and cells of the body, and it seemed to him that, if Dr Paton's suggestion would hold, it would be a most fruitful field for further investigation, and he foresaw that there might possibly even be histological developments, which would be of exceedingly great interest. He hoped Dr Paton in future researches would leave the beaten track of carbohydrates and achieve something in this direction.

Dr Gillespie said that Dr Paton had mentioned that in starvation the phosphorus in the liver was not diminished. He (Dr Gillespie) wondered if he had investigated the amount of phosphorus passed in the urine at the same time. It appeared to him that if the amount of phosphorus remained constant in the liver and there was some loss in the urine all the time, the bones and other parts of the body containing phosphorus must be losing phosphorus, which was kept up to the normal in the liver. He thought it was Dr Pavy, Dr Paton's friend in London, who stated that carbohydrates might be turned into fats in the cells in the walls of the intestinal villi. He would just like to ask Dr Paton—who he knew denied it—assuming it to be a fact that fat was formed in these villi, what effect it would have on his researches on the fats of the liver?

Dr Stockman said that with regard to the fattening experiments, Dr Paton had brought before them a number of tables showing that the melting-point diminished when they gave such things as cream. He (Dr Stockman) wanted to know if he thought cream was absorbed as such, and was not much changed in the body; because, if so, when one started fattening a person on cream one would get a white, creamy fat. If, on the other hand, cod-liver oil were given, there ought to be a yellow fat. It seemed to him (Dr Stockman) that the fat must undergo some change, and not be simply an infiltration, and that it could not affect the melting-point so directly as Dr Paton said. One other point he would like to ask him about. He understood him to say that the glycogen formed fat, but he understood that the point at issue between him and Dr Pavy was that it formed glucose entirely, and not fat. He would like to know also if the fat cells did not play an important part, or were entirely passive. (Dr Paton: "You mean adipose tissue. Undoubtedly it does. I pointed that out.")

Dr Paton, in replying, said he would be as brief as possible. Phosphorus poisoning he declined to enter upon. It raised so many vexed questions that he did not discuss it. Dr Abernethy was at present working at it. It actually diminished the lecithin. As regards the giving of fatty food for obesity, the results might be obtained by inducing dyspepsia and diminished absorption. Dr

Gibson had asked if he could draw any practical deductions. He thought common experience had drawn these practical deductions before physiologists investigated the question. Dr Dunlop's remarks were of great interest. He (Dr Paton) expected different results. They did not know the diet of the patients from whom the liver had been taken. One might have been taking cod-liver oil, another beef-fats. As to Dr Gillespie's remarks, in starvation phosphorus fell rather less in proportion than urea. As starvation was going on there must be a certain loss. All he maintained was that the liver interfered with the loss. As to the fat in the cells of the intestine, Dr Gulland and he had investigated this thesis of Dr Pavy's, and he thought they managed conclusively to prove that the carbohydrates did not form fats in the cells of the intestine. What Dr Pavy found was the fat in the oats on which he had fed his rabbits. Dr Stockman raised the question of the changes of fats in absorption. It had been shown that fats of lower melting-point were absorbed more rapidly than those of higher melting-point. There was no doubt, from recent researches, that after the administration of rape oil fats there was a large amount in the tissues, and undoubtedly in patients who had been taking cod-liver oil there was an accumulation of fat, with a large amount of oleic acid. While he thought there was evidence that glycogen could be converted into fats by the liver cells, that by no means disproved that the liver cells could also form sugar from glycogen, that fat and sugar were products of liver cells, which could form them out of anything it could get hold of for the purpose.

2. *Dr Leith* read his paper on AN INQUIRY INTO THE PHYSIOLOGY OF THE ACTION OF THERMAL SALINE BATHS AND RESISTANCE EXERCISES IN CHRONIC HEART DISEASE (THE BAD NAUHEIM AND SCHOTT SYSTEM). The first portion of this paper appears at p. 804 of this Journal.

The President said that they were very much obliged to Dr Leith for having brought before them a method of treatment that appeared to have attracted attention recently, and also that he had employed a certain amount of the healthy scepticism with which all new methods of treatment should be regarded until they had been analysed and their effect ascertained.

Dr George Balfour, in response to an invitation from the President, said that he so entirely agreed with every word Dr Leith had said that he had nothing more to add. He thought Dr Leith was perfectly justified in pointing out that the limits of cardiac dulness varied indefinitely every few seconds, and to base any fixed diagnosis of the size of the heart upon these percussion limits was to reason from a fact which had no real foundation whatever. He thought Dr Leith had very clearly expounded the various methods with which the System of Schott was concerned, and he also agreed with him that it was not at all a system of treatment that could be employed with impunity in all cases. In a certain number of carefully selected cases it was of great advantage; but there was no doubt that to a great extent its influence was upon the minds of patients quite as much as upon their bodies, and especially upon their hearts; while, if employed rashly and in cases that were unsuitable, it was certain to be unavailing, and might be even disastrous.

Dr Gibson said that Dr Leith's paper was of such value that even although one agreed entirely with the observations he had brought before them, and had therefore but little to criticise, one ought to offer him a meed of praise, not merely for the courage with which he had brought forward his views, but also for the great care he had spent on the matter. He would be inclined, however, to cross swords with Dr Leith as to the accuracy of the modes of ascertaining the size of the heart. The only way in which they could prove their methods was necessarily in the cadaver. Over and over again he had been able to demonstrate that they could map out the size of the heart to within $\frac{1}{16}$ inch all round without very much difficulty. He thought Dr Leith would substantiate him in making that statement. There was greater difficulty, no doubt, on the right side, but even then the resources at hand for accurate percussion led them to surprisingly correct results. As to changes in size, no doubt, as Dr Balfour admitted, the heart changed its size every $\frac{1}{100}$ second, one might say. The changes in size from systole to diastole were perhaps surpassed by those produced by respiration. When forced inspiration could produce 60 mm. of negative, and forced expiration 90 to 100 mm. of positive, pressure, it was very obvious that the changes in the arterial and venous pressure, and consequent changes of pressure in ventricles and auricles, must vary within very great limits indeed; and these changes in inspiration and expiration he thought went a long way to explain what they observed as the result of passive exercises. Possibly in the near future they might see with their own eyes what went on there. He had been observing in Prof. Grainger Stewart's wards the results of passive exercises and resistance exercises on the size of the heart; and, speaking generally, he would only say this, that mere massage seemed to have little influence on the size of the heart, while resistance exercises had considerable power of modifying its size, but he thought that came about through changes in respiration. With regard to the remedial effects of all these measures, he thought they could not expect very much from them. Patients came back from them in a state of high exhilaration, but it did not take much in the shape of a catarrh, gastric or respiratory, to upset the results. In some of the patients in the Royal Infirmary who had undergone resistance exercises, what benefit was produced was nearly evanescent.

Dr James Ritchie agreed with Dr Gibson that *in the cadaver* it was possible by percussion to ascertain, with a considerable degree of precision, the size of the heart. The theories supported by Dr Leith were in accordance with the teaching of the text-books, but Dr Ritchie thought that there must be some fallacy in the experiments on which this was based. It seemed to him to be contrary to reason that a dilated heart, which was unable satisfactorily to carry on its work, the action of which was rendered more irregular and its rate increased by exertion, physical or mental, or by reflex causes, that such a heart could be benefited, its action rendered slower and more regular, by an increase of pressure within the vascular system; that is to say, by increasing its work. A heart which was only slightly enfeebled might be so benefited, through the increase of tension improving the nutrition of its walls. He believed that the baths at Nauheim and the passive exercise produced beneficial results by diminishing the peripheral resistance to the circulation by means of a dilatation of the capillaries. He understood Dr Leith to say that saline baths had no stimulating effect. Was it not a matter of everyday experience that sponging with tepid or cool salt water was more stimulating than fresh water at the same temperature? It was a most useful method of treatment during recovery from debilitating ailments. He believed that the baths at Nauheim acted not only by dilating the capillaries, and so diminishing obstruction to the outflow of blood, but also by stimulating the heart through the vagus, and so producing a more perfect contraction of the heart muscle.

Dr Leith, in reply, said that he must first of all state that he had listened to Dr George Balfour with a great deal of pleasure, and also, in a sense, with some disappointment, because he was hoping that he would perhaps find out some source of error that he (Dr Leith) had not discovered. He paid the greatest deference to what he said on the subject, and it was very gratifying to him to find so great an authority as Dr Balfour entirely agreeing with him, especially upon such an important subject as that of heart percussion. He confessed that his own opinion, as he went on with these observations, underwent marked changes. He was not then in the healthy position with regard to percussion that he was in now, and which he hoped his friend Dr Gibson would some day reach. He had percussed the cadaver perhaps as often as Dr Gibson or Dr Ritchie, and he agreed with them, and had indeed stated it that night, that in almost every case such percussion was correct except in cases of marked emphysema or where the right lung largely covered the heart, and he was quite sure that in these cases even Dr Gibson's or Dr Ritchie's practised percussion would fail. But what he wished especially to emphasize was that the difficulties in the way of accurate cardiac percussion were in some way peculiar to life, and did not exist in the cadaver. Estimation of the heart's dulness during life could only at best be approximate. Dr Gibson had referred to the influence of respiration on the pressure on the left side of the heart. He (Dr Leith) doubted if it could increase endocardial stimulation of the left side of heart very much. Experiment had not, at any rate, been able to determine it. Apart, however, from the slight differences of opinion which might exist between some of the speakers and himself on minor points, he was gratified to learn that they supported him in the restrictions he had put upon the System, and this was all the more agreeable seeing that this was the first time that any adverse criticism had been made public. (Dr Herschell's paper has since then appeared, *The Lancet*, Feb. 15.)

OBSTETRICAL SOCIETY OF EDINBURGH.

SESSION LVII.—MEETING III.

Wednesday, 8th January 1896.—Dr Berry Hart *in the Chair.*

I. O. H. Isard, M.B. C.M., Docharn, Elmbourne Road, Upper Tooting, was elected an Ordinary Fellow of the Society.

II. *Dr N. T. Brewis* showed—(*a.*) Four PAPILLARY TUMOURS OF THE OVARY; (*b.*) two PUS-TUBES removed from a young woman aged 20; (*c.*) two INTRA-LIGAMENTARY OVARIAN TUMOURS removed from a patient aged 60; (*d.*) UTERINE APPENDAGES removed from a patient with myoma of the uterus.

(*e.*) OVARIAN TUMOUR removed by abdominal section after complete detachment of the pedicle. Mrs G., æt. 40 years, patient of Dr Fleming, Kelso, was admitted to Cambridge Street Home for Women on November 4, 1895, complaining of an abdominal swelling. Married twenty years; one child nineteen years ago; no miscarriages.

History.—About two months previous to admission patient noticed that her abdomen had become swollen. The swelling continued to increase, and about six weeks later she began to suffer from occasional dragging pains in the lower part of the abdomen, worse on the right side, and pains going down the left leg. She then consulted Dr Fleming, who told her an operation was advisable. Before admission the pain had almost entirely ceased. There had been greatly increased frequency of micturition since the swelling was noticed. The swelling had not inconvenienced her in any other way, and she had been able to perform her household duties as usual.

Menstruation regular, twenty-eight day type, lasting about a week, ordinary amount, slight pain during several days before and first two days of flow; not modified in any way by presence of swelling, except an increase of pain at periods. Never any intermenstrual discharge. Micturition much increased in frequency for last two months. Bowels very regular. Previous health and family health good.

Physical Examination (made Nov. 6).—On inspection the abdomen was seen to be occupied in a nearly uniform manner by a swelling. The contour was rounded, bulging being most distinctly prominent about 2 inches below the umbilicus and in the flanks. Umbilicus slightly retracted. On palpation a distinct large mass was felt occupying the whole abdomen, except right hypochondriac region. This was fairly movable. Fluctuation was well marked in portions of the tumour. The mass was of fluid consistence, and had a smooth surface; fluid thrill was not easily made out. On percussion a dull note was got over the rounded area about and below the umbilicus. A resonant note was got in the flanks, and a zone of resonance was found to extend round the lower limit of the swelling continuous with the note from the flanks. On auscultation nothing was heard except a few intestinal gurglings.

Mensuration.—Girth at umbilicus, 35 inches; girth 2 inches below umbilicus, 36 inches; umbilicus to pubes, 7 inches; umbilicus to right ant. sup. il. spine, 7½ inches; umbilicus to left ant. sup. il. spine, 7½ inches.

On bimanual examination the uterus was felt to the right side and to the back. No part of the tumour was felt in the pelvis, and traction made upwards upon the tumour rendered neither fornix tense.

Progress and Treatment.—From her admission on November 4 until November 14 the patient was exceedingly well. She was free from pain, and her general condition became much improved.

On the 13th her bowels did not move at all, and only slightly on the 14th. On the 14th her abdomen felt very hard, and after she had gone to bed in the evening she complained of a severe pain "in her bowels." Castor-oil was administered, and it was repeated next morning, and an enema given, which procured a free motion. During the whole of the next day she was fairly well and free from pain. On the morning of the 16th the bowels again moved freely, but later in the forenoon she again complained of abdominal pain, and vomited. She continued to complain of pain all day, and in the evening the temperature rose to 100° F. On the morning of the 17th she again had castor-oil and was fairly well all day, although complaining of some pain. The pain in the evening became so severe that two ¼-grain morph. suppositories were given, after which she had a good night. Next morning (the 18th) she was seized with severe abdominal pain and vomiting. The abdomen was generally distended, hard, and very tender, and a peritonitic rub was distinctly heard all over the abdomen. There was also a well-marked pleuritic rub. The pain was all through the attack most severe low down in the right side. The temperature remained about 100° and 101°, and the pulse about 120-130. Poultices were constantly applied. On the evening of the 19th flatus was passed, and later on the bowels moved copiously.

The distension began to diminish, and the abdomen became softer. She continued to improve steadily until the beginning of December, when she was considered strong enough for operation.

On December 3 abdominal section was performed. Previous to rupture the tumour was freely movable. At the time of operation it had increased in size and was immovable. The intestines were found closely matted to one another and to the entire surface of the tumour. The adhesions, however, were not strong, and the bowels were separated from the tumour without difficulty. No distinct pedicle was recognised, though a band of tissue resembling one was found attached by delicate adhesions to the right lower surface of the tumour. On aspirating the latter it was found to contain dark venous-like blood. The bowels were, as before stated, adherent one to another. Their peritoneal coat was very dark in colour, and blood oozed from its surface. No ligaturing was required, the tumour being simply shelled out from amidst the surrounding bowels. The abdomen was irrigated and drained, and the patient recovered without a bad symptom.

When removed the tumour presented a dark reddish-brown appearance, slightly green in places. The tube was found lying along the outer surface of the tumour for about 4 inches, its inner end being broken off at the raw surface representing the site of the pedicle attachment. The tumour was found to be unilocular, and, as before mentioned, was filled with dark blood. The wall of the cyst for a considerable area at the site of the pedicle is greatly thickened and infiltrated with dark venous blood. The remainder of the cyst wall is somewhat thin.

III. *Dr Kynoch* showed specimen of ARRESTED DEVELOPMENT OF AN EMBRYO. The woman from whom it was got was 28, and had three full-time healthy children. In April 1893 she had a miscarriage about the third month, followed by pelvic cellulitis. In October 1894 she had another miscarriage at the sixth month. She was then perfectly regular every month till the end of June 1895, her last period ceasing on the 30th. This was followed by nine weeks' amenorrhœa, and she aborted on the 31st of August, but she had slight hæmorrhage for ten days before this date. The gestation sac when fresh was about the size of a small hen's egg, covered by the decidual membranes. There were recent hæmorrhages at both ends of the sac. On opening the sac a small quantity (probably a teaspoonful) of viscid fluid escaped, and lying close to the inner surface was found an embryo measuring 3·5 mms. in length, and corresponding in size to an embryo examined by Prof. Winckel, and supposed by him to be fourteen days old.

IV. *Dr C. Martin*, Birmingham, showed FIVE UTERI REMOVED BY PAN-HYSTERECTOMY. (See Cases III., IV., V., VI., and VII. in Dr Martin's paper, pp. 831–833 of this Journal.)

V. *Dr J. W. Ballantyne* showed—(*a*.) A small INIENCEPHALIC

FEMALE FŒTUS, which Dr Geo. H. Pirie (Dundee) had kindly sent him. The following were the clinical notes of the case:—The mother, aged 42 years, a x.-para, had been married twenty years. She had had eight confinements at the full term, and all these ended in the birth of living infants; but of these three have since died,—one from bronchitis, another from whooping-cough, and the third, at the age of 5 years, from a "trouble in his head," which was accompanied by starting and screaming at night and by great wasting. The other five children are strong and healthy. She had one miscarriage at the fourth month about five years ago. It is stated that the fœtus was perfectly formed. In the present pregnancy (the tenth) nothing worthy of note occurred save the absence of movements, till at the seventh month suddenly the whole ovum came away entire (Dec. 17, 1895). She had last menstruated in the middle of May, and had had no accident or shock. On cutting into the amniotic sac about a pint of liquor amnii of a pea soup consistence and colour was found, and in this was the small fœtus attached by a cord 18 inches long. The placenta and membranes seemed to be normal. The mother has made a good recovery, and both she and her husband have always enjoyed good health. The fœtus was typically iniencephalic, but was considerably macerated, and must have been dead *in utero* for two months or so. There was retroflexion of the spine and a collapsed spina bifida.

(*b.*) A PLACENTA showing the persistent UMBILICAL VESICLE. It lay in close proximity to the insertion of the cord, which was markedly eccentric, and a distinct fold of the amnion ran directly from the cord to the vesicle. This fold has been often referred to. The fœtus was prematurely born about the seventh month, and the mother was albuminuric.

VI. *Dr R. C. Buist*, Dundee, showed a FŒTUS COMPRESSUS.

VII. *Dr C. Martin*, Birmingham, read a paper on PAN-HYSTERECTOMY, which appears at page 825 of this Journal.

Dr Berry Hart congratulated Dr Martin on his most brilliant paper. Some of the cases were unique, and, so far as he knew, no one had previously diagnosed such a case as that of uterine perforation in hydatid mole, far less operated on it successfully by total extirpation. His own opinion agreed as to operations in fibroids with that of Dr Martin. He approved of removal of the appendages in suitable cases, and of total extirpation in those where the uterus was too large for the former operation. Dr Martin had evidently improved the technique of the latter operation, and his success was most encouraging.

Dr N. T. Brewis had much pleasure in congratulating Dr Martin on the lucid description which he had given of pan-hysterectomy, and on the excellent results which he had obtained in the cases operated on by him. When a myomatous uterus required to be removed, he (Dr Brewis) was of opinion that the operation just described was the best one, and he had no doubt it would become the operation of the future. The most difficult part in the technique is the tying of the uterine arteries, chiefly from their position and their close relation to the ureters. Dr Brewis had found that they become more accessible when the patient is in the Trendelenburg position, and the danger of including the ureters in the ligature is abolished when the operator passes probes along them after the method of Kelly. He considered that the extra-peritoneal operation, with Koëberle's wire constrictor, had still a place in the treatment of these tumours, chiefly on account of the rapidity with which the operation could be performed, and he would always prefer it when he had a feeble patient to deal with. In the cases which Dr Brewis had operated on by this method he was well satisfied with the results, and he had not found that they were followed by hernia more than other abdominal operations were, though certainly the convalescence was more prolonged. He also held that there was a class of cases where removal of the appendages gave the desired results, viz., in tumours which did not extend above the pelvic brim. If the ovaries and the whole of the tubes along with the broad ligaments as low down as beneath the round ligaments were removed, one can in nine cases out of ten make sure of the cessation of the growth of the tumour. At any rate, such was his experience.

Dr Martin, in reply, thanked Dr Hart and Dr Brewis for their kind criticism of his paper. He could only find some seven or eight cases on record of "perforating hydatid mole"—all discovered post-mortem. He believed his own to be the first case that had been diagnosed during life and saved by surgical interference. The "clamp" operation was undoubtedly an easier and more rapid proceeding than pan-hysterectomy, but it was more fatal. He did not use the Trendelenburg posture,—(*a*), because vessels which did not bleed in this position might do so after the wound was closed, when the patient's legs were lowered; (*b*), because of the tendency of blood to gravitate towards the diaphragm and escape notice; (*c*), because by traction on the uterus the pelvic floor became quite accessible. So far he had had no trouble from the ureters, and he did not catheterise them. But he could quite see that such a proceeding might be of great service in difficult cases, as undoubtedly the great danger of the operation was ligation or division of the ureter.

VIII. *Dr J. A. C. Kynoch*, Dundee, read a paper on A CASE OF FATAL INFANTILE JAUNDICE FROM CONGENITAL NARROWING OF THE COMMON BILE-DUCT, which will appear in a future number of this Journal.

IX. *Dr J. W. Ballantyne* read a paper on UTERINE CURETTAGE, the discussion on which was postponed. This paper appears at page 787 of this Journal.

ROYAL MEDICAL SOCIETY.

Dec. 13.—Dr Maclean in the Chair.

Dr Scott Skirving described—1. The case of a girl, aged 9, who was admitted to the Infirmary suffering from shock, the result of a fall of about 10 feet on to wooden steps. She was brought in an hour after the accident, complaining of pain in the back. She had widely dilated pupils, with sluggish reaction. Hands and feet were cold to the touch, and the greenish hue of face contrasted with bluish hue of lips. Breathing was shallow, temperature normal, and there was no sweating. She had vomited before admission. An enema of brandy was given, and hot-water bottles applied. There was great tenderness over right kidney behind and a bruise over left eyebrow. Fomentations to back relieved the pain. About 6 P.M. 4 ozs. of blood came from the vagina, with one or two long clots. The patient again collapsed. Twenty-five minims of turpentine were given. A little bloody urine was drawn from the bladder. Rupture of right kidney was considered the most probable diagnosis. The pulse rose to 160, in spite of digitalis and brandy. At 4.15 A.M. the patient was apparently dying. Pulse could not be counted, and there was a copious cold sweat, Cheyne-Stokes breathing, and sunken eyes. As a last resource, he injected 6 ozs. of saline solution into median basilic vein. The operation lasted sixteen minutes. There were no symptoms during the transfusion, and five minutes later there was a marked change: the pulse grew stronger and could be counted, pallor diminished, and the patient opened her eyes, and remarked that she would have to be washed. Temperature rose to normal, sweating ceased, and she thenceforth made steady progress. Urine became normal. There was tenderness over right kidney for a week, and there was a spot of ecchymoses of the size of half a crown below twelfth rib on right side. Other cases in which transfusion was done were referred to. He also showed —2. An elderly man who had sustained an unusual form of dislocation of the elbow with fracture of radius 3 inches below its upper end, caused by the sudden rearing of a horse which he was grooming in its stall, while his arm was entangled in the chain attached to its halter. Pronation and supination were now very fair, but he could not flex beyond a right angle. There was very little thickening at seat of fracture. The radius had moved forward and to opposite side of arm, and the ulna was dislocated backwards. No large vessel or nerve was ruptured. He showed—3. A seaman from Leith Hospital, who, owing to the hatch on which he had stepped giving way, had fallen to the bottom of the hold, a distance of 25 feet. The foot presented the appearance of extreme eversion. The ankle-joint was uninjured, but the bones of the foot were dislocated from the astragalus upwards, outwards, and slightly backwards. A piece of os calcis was removed and passive movement begun on fifth week, and he was still improving under massage.

Dr Hutchison expressed doubt as to the kidney having been merely contused in the first case, and referred to one of a series of cases recorded by Dr Alexis Thomson, which showed that injury to viscera was often in inverse proportion to external bruising. Dr Thomson advocated the immediate laparotomy in such cases, even in the absence of definite evidence of rupture of a viscus. He thought the blood must have come from the urethra rather than the vagina. In children Cheyne-Stokes breathing was more frequent and better marked than in adults, and occurred in cerebral anæmia,—*e.g.*, towards the end of tubercular meningitis. Roy had elaborated the subject of shock, and showed that the blood stagnated in abdominal veins.

Dr Beesley cited a case of bleeding fibroid polypus in which transfusion had done good. Injection into rectum was better than injection into cellular tissues.

Messrs Cuthbert and *Williams* having also spoken,

Mr Thacker explained the fracture of the radius from the position of the chain in relation to the arm.

Mr T. A. Ross described the case of a man, aged 46, who had been admitted to the Infirmary complaining of an aching pain in the left side of the abdomen. He stated that two months before admission, while lifting a heavy weight, he felt as if something had given way below last rib on left side. He had pain on deep inspiration, which ceased in ten days. He was then seized with paroxysms of severe pain in the same region, lasting ten minutes, and occurring at intervals of about an hour, but they ceased under treatment. Sharp, stabbing pain now occurred, and then pulsation was noticed on left side of abdomen, which, along with the pain, had lasted ten days. Within the last three weeks patient had lost 11 lbs. in weight. There was a history of chronic dyspepsia, but no vomiting. No syphilis or alcoholism. Temperature was normal or subnormal. The pulsation, which was most marked near middle line, was not expansile, and there was no fluctuation or thrill. The condition had probably arisen from rupture of a gastric ulcer setting up peritonitis. Mr Duncan had had a similar case, in which he found such a condition on performing laparotomy.

The case was discussed by *Messrs Blaikie, Watt, Williams,* and *Thacker.*

Mr Harry Fowler read his dissertation on Intestinal Surgery, in which he gave a lucid and exhaustive account of modern methods. He also considered the chief dangers, and drew conclusions as to rational practice. The methods considered were approximation, resection, intestinal anastomosis, enterotomy and enteroplasty,—the first in some detail, the others more generally. The relative merits of sero-serous and sero-fibrinous union were discussed, the conclusion being that the former was better for loose adhesion, as in temporary enterostomy, the latter in resection and permanent artificial anus. Under the head of approximation he considered simple suture, suture aided by invagination, suture aided by introduction of foreign bodies into lumen, — *e.g.,* Senn's plates and Robson's bobbins; mechanical appliances such as Duncan's ring and Murphy's button; past and present methods under each of these sub-heads being treated in considerable detail. As for resection, 208 centimetres of bowel had been removed by Kocher without bad result. Intestinal anastomosis could be done in three ways: simple suture, Senn's plates or some substitute, and *procédé de la pince,* described by Casamayor. In enterotomy they made a fistulous communication with the exterior, which might be either stoma or anus. He considered the chief dangers under the heads of the disease itself,—shock, peritonitis, obstruction, and marasmus. Simplicity in method and apparatus was the great desideratum. The dissertation was well illustrated with diagrams, carefully drawn on the board.

Dr Beesly and *Mr Ross* spoke.

Jan. 10.—Dr Bowes in the Chair.

Dr T. S. Clouston delivered the Inaugural Address, which had been postponed owing to his illness at the beginning of the session. There was a large assemblage of members and their friends, and among guests and former members present were Sir Henry Littlejohn, Emeritus-Prof. Struthers, Profs. Crum Brown, Chiene, and Rutherford, Dr Batty Tuke, Dr George Balfour, and many other well-known medical men.

The subject of the address was The Mental and Nervous Element in Disease. To well-constituted minds, he said, it had a satisfying as well as a stimulating effect to "get hold of a principle." The modern study of medicine consisted—necessarily, he feared, in its present stage—to so great an extent in the acquisition and storing up in the memory of vast numbers of isolated facts, that one of the greatest services any teacher could render to a student was to impress on his mind leading principles that should henceforth become, so to speak, rails along which his mind would necessarily travel when a problem had to be solved to which those principles were applicable. Due consideration of the mental and nervous element in disease would bring to light the principle, very important for therapeutics, that all bodily processes, normal and abnormal, influenced and were influenced by the cerebral cortex. The mental cortex of man was the apex of the evolutionary pyramid, whose base was composed of the swarming myriads of bacilli and other unicellular germs which they now saw to be almost all-pervading in Nature. In the cortex every function and every organ were represented, a fact too much lost sight of. Some people, if they wished to imply that a patient's symptoms were unimportant, called them "nervous"; if they wished to ticket them as unworthy of consideration altogether, they called them "mental"; and if they desired to brand them as quite absurd, and out of the pale of human sympathy or medical effort, called them "hysterical." Dr Clouston then proceeded to give numerous illustrations of the influence of the nervous system on what were, to all appearance, purely physical or local changes, both normal and diseased. The history of medicine was full of examples of emotional conditions causing and curing disease. Sir Samuel Baker said that any severe action of the mind, such as grief or anger, was almost certain to be succeeded by fever in certain parts of Africa. Rheumatism and gout were frequently caused by anger, fright, and depressed emotion. Shakespeare said, in the *Merchant of Venice*—

> "Why should a man, whose blood is warm within,
> Sit like his grandsire, cut in alabaster;
> Sleep, when he wakes, and creep into the jaundice
> By being peevish?"

It was, indeed, the case that certain persons were sound in body so long as they were well in mind. When disturbed in mind they fell victims to their diathesis. The value of bright surroundings, hopefulness, and confidence in the doctor, as factors in the cure of disease, was well known, and this applied even to surgical cases. Such considerations prevented them from falling into that evil sort of surgical-mindedness which took account only of the gross anatomy of the part affected, and such things as could be seen and felt by the surgeon. It enlarged their conception of the human organism into something of that degree of complication which actually existed in Nature, and explained many of their miscalculations and disappointments. He could not help adverting to what he considered the rash and unjustifiable way in which the operations of castration and removing the ovaries and appendages were recently looked at without any reference to their mental effects on the subjects of them. No philosophic-minded gynecologist could look lightly on the deliberate extinction, by surgical means, of the essential organs of reproduction. Yet he had seen the operation recommended with as little consideration of consequences as the opening of a whitlow. In his opinion it might almost be as great a crime to castrate as to kill. The *rôle* of the brain in febrile conditions was next considered. Dr Clouston then referred to the valuable work done by his former teacher, Prof. Laycock, of their own University, a gifted pioneer in the department of neurology, who specially emphasized the importance, for purposes of diagnosis, of the scientific study of physiognomy, and the outward signs of diathesis. No man before or since had had so wide a grasp of the position and functions of the brain and its relations to mind, to development, to bodily function, and to pathological processes. Laycock filled in the gap between Charles Bell and Marshall Hall and the modern British school of neurology. His book on *Medical Observation and Research* was one of the most striking illustrations of a certain type of mind that ever was written. He had, no doubt, his weak points, which, unfortunately, lay on the surface. Dr Clouston then said that, if he might venture to be a little didactic, he would advise them to repress within bounds the tendency, natural enough at their age, to see what they thought the small and ridiculous in their teachers, and rather to cultivate that side of their nature that made for respect, appreciation, and even reverence. He wished he had so regarded Laycock to a greater extent than he did when a student of his. Several examples of physiognomical diagnosis were then given, and some remarkable cases related of functional disorders and even organic lesions being caused and cured by mental impressions. Constipation, for example, had been cured by doses of medicine containing no laxative, but with dogmatic assurances that a stool would follow in an hour. Warts had been "charmed" away; scurvy among sailors had been cured by the prospect of a naval fight; gouty swellings had disappeared when "Mad dog!" or "Fire!" had been cried out suddenly to the sufferers. In conclusion, he dealt with the diurnal variation in the activity of the nervous system, citing examples of many sorts of disease which showed their worst symptoms at night, when the higher centres lay dormant, and relaxed their supervision, as it were. It was then, too, that death very commonly occurred in those enfeebled from disease or other cause. He also quoted freely from *Macbeth*, in which, he said, Shakespeare had given them a true psychological study of the nocturnal aggravation of mental symptoms.

The address was enthusiastically applauded.

Dr Bowes moved a vote of thanks to Dr Clouston, and expressed the hope that the address would be printed for the benefit of the Society.

Prof. Rutherford, in seconding, recalled old times when Dr Clouston and he used to take part in many a keen debate at the meetings of the Royal Medical Society. He urged on students the importance of joining it, pointing to the able address they had just heard as the fruit, to a large extent, of the early discipline received from such a Society as this.

Dr Clouston, in briefly replying, expressed his willingness to accede to the request of Dr Bowes.

GLASGOW OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.

MEETING II.—NOVEMBER 27, 1895.—Dr G. A. TURNER, *President, in the Chair.*

Prof. Murdoch Cameron showed a SET OF TEN UTERINE DILATORS, intended for rapid dilatation. They are graduated, the first from 3 to 5 mm., the second from 4 to 6, and so on, and they resemble in length the ordinary uterine sound. He also showed a FULL-CURVED HANDLED NEEDLE, with the same kind of point as Hagedorn's needles, suitable for stitching either the perineum or the abdominal walls.

Dr Balfour Marshall showed HYPODERMIC TABLOIDS OF ERGOTIN.

Dr Beatson read a paper on CYSTIC DISEASES OF THE UTERINE APPENDAGES, based on his experience in upwards of fifty completed operations. Illustrative specimens from his museum were exhibited. Of his cases, the youngest was 19 years of age, the oldest 70; the great majority were married women, and several have had children since operation. The number of deaths was four, due respectively to septic peritonitis, shock (on the morning after a very prolonged operation), obstruction of the bowels (three weeks after operation), peritonitis supervening on the fifteenth day after the patient had been allowed to get up. Dr Beatson, after describing the development of the uterine appendages, said that he based his classification of cystic diseases of these on the following well-differentiated structures—(1), The true parenchyma or oöphoron; (2), the hilum or paroöphoron; (3,) the parovarium; (4), Gärtner's duct; (5), Müller's duct as represented by the Fallopian tubes, uterus, and vagina. He described very fully the pathology of cystic disease, agreeing in the main with the views of Bland Sutton and Doran; and the various classes were illustrated by typical specimens. In discussing the treatment, he referred to the recognition, in these days, of the necessity for early ovariotomy, thereby avoiding the risks attendant on sudden rupture of the cyst, twisting of the pedicle, etc. In two of his cases the pedicles had become twisted, and the patients had then had violent attacks of peritonitis. In both instances he operated as soon as possible, with successful result, finding the adhesions extensive, but fresh and easily separated. In other two of his cases of multilocular cysts a cyst was found to have been ruptured, but without giving rise to any alarming symptoms, and both made good recoveries after operation. In one, both ovaries had to be removed; in the other, one was healthy and was left, and the patient has since had two children. On the twelfth day after operation the latter patient had an attack of abdominal pain, and some fulness and hardness were noted in the left iliac region. The pedicle was very close to the uterus, and this was believed to be a hæmatocele, which is liable to occur in such cases at the first period after operation. Dr Beatson then showed a specimen, and gave a description of another very instructive case. The patient, aged 42, first observed the tumour when she was 16 years of age. Sir James Simpson was consulted, and recommended operation. Consent was not given, and Dr Thomas Keith was afterwards consulted. Dr Keith evidently believed the tumour to be parovarian, as he tapped it, and at that time he held the view that such cystic tumours could be cured by tapping. There was no further inconvenience from the tumour until March of last year, after a severe attack of influenza, when abdominal pain returned, and the tumour reappeared. The operation on May 12 was difficult, owing to the number and density of adhesions, and there was no distinct pedicle. The case, apart from its historical interest, was noteworthy, from the fact that its walls had undergone calcareous degeneration, a not very common occurrence, and one likely to become rarer every year now that early ovariotomy is being practised, and the cyst contents were purulent, a condition associated by Dr Beatson with the lowered health consequent on the attack of influenza. Another interesting case was that of a young unmarried lady of 25, who had had several attacks of peritonitis, after the last and most severe of which there was discovered a large swelling behind and to the right of the uterus, found on operation to be a greatly dilated right Fallopian tube. The left ovary was also found to be enlarged and cystic, and both were therefore removed. On the second day there was abdominal pain and a very rapid pulse, with slight rise of temperature, and on the fourth day a parotitis of the right parotid gland declared itself. This subsided again by the sixth day, and the patient had no further trouble. Dr Beatson believed the parotitis in this case not to be due to a septic influence, but to be a metastasis. The last specimen specially described was one of ovarian cystic adenoma which had undergone a cancerous degeneration, removed from a patient aged 58. There was a history of rapid growth and progressive loss of health, which, together with the physical signs, led Dr Beatson to fear that it was a cystic sarcoma of the uterus. Dr Beatson then referred to the special difficulty of deciding what was to be done in the more doubtful cases of slight dilatation of tubes and cystic degeneration of the ovaries, consequent on repeated attacks of pelvic inflammation, conditions which showed themselves clinically by pain, especially severe at the menstrual periods, and present also at other times in the shape of paroxysms of suffering. His feeling was that if the general health was impaired, if the patient was incapacitated for her everyday work, and if all the usual routine of palliative and curative measures had been tried, then it was right to operate, and in his experience the results had justified operation. Several specimens from such cases were shown. Dr Beatson concluded by saying that "on no condition, however, should the uterine appendages of a woman be removed where no appreciable lesion exists, save where for curative means it is sought to artificially bring on the menopause. Nothing but disaster has followed such a procedure in so-called 'nervous women,' and it should be rarely, if ever, resorted to."

Dr G. Balfour Marshall then read a paper on A CASE OF ABDOMINAL SECTION FOR DISEASED APPENDAGES.

Prof. Murdoch Cameron, *Drs W. L. Reid* and *Sloan*, took part in the discussion of the papers. Dr Reid agreed with Dr Beatson in his objection to abdominal operations for the relief of purely nervous symptoms, but he would make an exception in cases where there was an absence of the uterus. In his experience the menstrual discharge in first or second week after operation, as noted by Dr Marshall in his case, was a common occurrence. Dr Beatson corroborated this from his experience. Dr Sloan referred to the danger of over-operating in gynæcology, and advocated puncture and cautery, without complete removal of the ovaries, in suitable cases.

Part Fourth.

PERISCOPE.

OCCASIONAL PERISCOPE OF DERMATOLOGY.

By W. Allan Jamieson, M.D., F.R.C.P. Ed., Physician for Diseases of the Skin, Edinburgh Royal Infirmary ; Lecturer on Diseases of the Skin, Edinburgh School of Medicine ; late Consulting Physician to the Edinburgh City Hospital for Infectious Disease.

Post-Epileptic Alopecia Areata.—Féré relates two instances of alopecia areata occurring in epileptics in which the neurotic rather than the parasitic origin seems the more probable. The relation of cause and effect is not difficult to determine when one has to do with patients in whom the seizures are infrequent, and when the special form of alopecia shows itself immediately after one. In his first case an epileptic, aged 32, had had vertigo and convulsive attacks since he was 13. The fits recurred about once a week, and the giddiness rather less often. During four years in which he had been treated by progressive bromization, taking at present 150 grains of K. br. daily, the giddiness had almost wholly disappeared. The fits were much less frequent, since he remained free from them for two, three, or even four months. Still the advantage was less than the patient himself believed, as formerly the attacks were single ; now they occurred in series of two or three, followed by depression, lasting two or three days, and incomparably greater than after the isolated seizures. He had not an attack from the 26th March 1891 until the 30th July ; then, with an hour's interval, he had two violent ones, and two others the next night. He was much more depressed than usual, was watched nearly constantly for two days, and it is certain that at this time the hairs, which were cut very short, were everywhere present. On the morning of the 2nd August he found his pillow strewn with hairs, and ascertained the existence of bald patches, which itched slightly. The patches were four,—three on the left parieto-occipital region, and one to the right of the whorl. They were quite white, circular, without trace of hair, and unmarked by pressure. Round them the hairs seemed perfectly healthy; they were set regularly, showed no alteration in colour, and were not loose. The itching ceased in a day or two ; no œdema was found. On the 18th August downy hairs began to appear all over the patches, and by the beginning of October, when the hair was cut, it was impossible to recognise the former position of the patches. Since then the patient has had two series of three crises, without loss of hair. The second case was very similar. He was 28, had had likewise epileptic seizures and vertigo from the age of 13, and under the same treatment the paroxysms had notably diminished. On the night of the 15th and 16th December 1894 he had four successive seizures, not having had any for several weeks. Next morning he observed that the hair had fallen off, and at the end of two days the scalp had assumed the appearance which it retained for some weeks. A photograph was taken on the 21st December, and showed more than fifty bald places. All were uniform in appearance, every trace of hair had vanished, the skin was smooth and healthy, without desquamation, evidence of scratching, or œdema. There was no discoverable alteration of sensibility. At the edges of the patches the hairs were absolutely normal, and were firmly implanted. On the 21st February the smaller patches were covered with fine hairs all over, but it was not till the end of June 1895 that the hairs had recovered their thickness, their volume, and their colour. In both cases alike the evolution of the lesions was not interfered with by any medical intervention either general or local.—*La Nouvelle Iconographie de la Salpêtrière*, 1895.

ACANTHOSIS NIGRICANS.—Malcolm Morris has recorded an instance of one of the rarest skin diseases, and apparently the first which has been recognised in this country. This occurred in the person of a single woman, aged 35, admitted under his care into St Mary's Hospital on February 15, 1894. There was nothing worth noticing in her history except menorrhagia, followed by scantiness of flow, though with undue frequency, for a year before. Her hands and feet had been always dry, though her skin generally was soft in texture, with no undue tendency to the formation of warts. First her hair, previously thick and long, became wiry, and commenced to fall off. In October 1893 she noticed a general bronzing of the upper half of the body. Crops of warts came on the back of the hands; patches of the skin on the chest, sides, and back became harsh and blackish, passing into a black, wart-like thickening in the axillæ. The mucous membranes were attacked in the early part of December, as a dryness of the lips, and in the end of the same month the palms and flexor surface of the fingers became thickened and orange-yellow, with fissures at the finger ends. In the middle of January 1894 "lumps" formed on the tongue, the inside of the cheeks became rough and wrinkled, and soon after warts appeared on the roof of the mouth. After this fresh warts developed on various parts of the body, the black patches increased in size, and the bronzing grew more diffused. When admitted, though wasted, her health was fairly good, the temperature was normal, the knee-jerk nearly absent. The skin lesions presented three principal features,—first, diffuse brownish discoloration or bronzing; second, patches of inky blackness; third, warty growths. The bronzing was widely diffused. The axillæ, neck, nipples, and some places in the middle line of the body, across the abdomen, and in the bend of the elbows, showed the inky blackness and warty growths. The skin of the palms was thickened, the lines deepened, the colour a light orange, while it felt like rough-piled velvet. In the axillæ and at the umbilicus were flesh-coloured, raw-looking patches. Besides the warty growths in the mouth, there were similar ones in the vagina. The black patches were found to be made up of numerous black granules, each of the size of a pinhead, and seated in the superficial layers of the epidermis. The warty growths were papillomatous. There were no subjective sensations beyond the discomfort due to the condition of the mouth. The urine presented no abnormality. While under observation the staining extended. A thick growth of white hair appeared on the face, and, though less in degree, on the chest and abdomen, while the hair on the head was rapidly turning grey and thin. Morris has no suggestion to offer as to the etiology, and adds that it would be absurd to attempt to erect any kind of theory, of however provisional a character, on so slender a basis of clinical facts. Treatment was purely expectant, the warts being kept in check as far as possible by the knife in the larger, the application of salicylic acid to the smaller ones. The paper is excellently illustrated by coloured drawings, which closely resemble those of Janovsky and Pollitzer.—*Medico-Chir. Trans.*, London, 1894.

THE HYGIENE OF THE FACE.—To a very large proportion of the human race in civilized countries the face is, under the designation of "the complexion," the subject of considerable and painstaking interest. Even those most exempt from vanity would prefer to have a physiognomy not readily identifiable by a more or less symmetrical crop of pimples; and a congested nose is not regarded as a thing of beauty, even in an omnibus driver. Yet, in spite of this general feeling in favour of a normal complexion, ignorance and carelessness between them wreak havoc, and it is the exception to meet with cheeks that have seen more than twenty summers which do not betray traces of ill-treatment. Apart from indigestion and constipation—two potent factors in the ruin of a naturally healthy complexion—there are a variety of forms of mismanagement which conduce to blotchiness and pimply deformities. Among them must be ranked the practice of washing the face with hot water, a widespread form of self-indulgence in cold weather. The hot water, especially when reinforced by a course of unduly alkaline soap, removes an unduly large proportion of the natural fat of the skin, leaving it with a roughened surface, which is very liable to excoriate or "chap," and requires more frequent washing to keep it clean, owing to its catching the dust. Nothing probably does so much to age the skin as the frequently repeated ablutions with hot water, and this may explain why the dainty Frenchwoman prefers to smear off the grime with the corner of a handkerchief steeped in glycerine, knowing by experience that good, honest soap and water is, in the long run, detrimental to the preservation of a healthy skin.—*Medical News and Circular*, 13th Nov. 1895.

SYCOSIS SCLEROTISANS (ACNE OR SYCOSIS KELOID).—Ehrmann relates a case of this very obstinate complaint successfully treated by electrolysis. The ailment usually affects the nape of the neck, creeping upwards more or less extensively into the scalp. It commences by the formation of a boil or pustule on the back of the neck, having its seat in a hair follicle. This is succeeded by others, the pustulation continually advancing farther and farther into the scalp. The skin over the part becomes hard, tense, and like gristle, creaking when cut into. The surface is uneven, the hairs grouped together into bunches as in a brush, and abnormally deeply set in the skin. Pus wells out on pressure from the openings of the follicles, and thick, ill-smelling crusts are apt to form. Ehrmann, as the result of cultivations, concludes that the ordinary organisms of suppuration are present. The keloid is possibly due to some idiosyncrasy of the person. Treatment has hitherto been unsatisfactory, but he has by patient and persevering employment of electrolysis—retaining the needle, plunged deeply into the tissue, for a longer time than is customary in the removal of ordinary hairs—succeeded in destroying the hairs, and with them putting an end to the suppuration, and eventually obtaining a smooth and soft scar.—*Archiv für Dermat. und Syph.*, Sept. 1895.

OCCASIONAL MEDICAL PERISCOPE.

By A. LOCKHART GILLESPIE, M.D., F.R.C.P. Ed., Medical Registrar to the Royal Infirmary, Edinburgh; Lecturer on Materia Medica.

THE RELATIONSHIP BETWEEN LEUCOCYTES, URIC ACID, AND GOUT. — At a meeting of the Berliner Verein für Innere Medicin, held in July last, Klemperer made an important communication on the subject of gout. Examination of the blood of three healthy persons showed the presence of uric acid in such small quantities that no quantitative estimation was possible; on the other hand, as much as 0·067, 0·088, and 0·091 grms. were obtained from the blood of gouty patients. Similar amounts, however, could be isolated from the blood of patients suffering from leukæmia and nephritis. In the gouty patients no relationship could be found between the amount of uric acid in the blood and that passed in the urine, nor between the quantity in the urine and the attacks of acute gout. He was therefore of opinion that the amount of uric acid in the urine could not be taken into account in the consideration of the pathogenesis of the disease. The only two facts which were certain were an undoubted richness of the blood of gouty people in uric acid, and a tendency in them to necrotic processes. On testing the amount of uric acid which the blood of such patients could dissolve over and above the quantity already held in solution, he found that it was practically the same as in healthy persons. That was to say, that the blood in gout was by no means saturated with it. The theory that the deposition of urates in the body was due to a lessened alkalinity of the blood met with the same objections. To sum up, he looked on gout as a disease due to diminished oxidation and not to increased uric acid production. Levison, who has already published a book on the subject, returns to it in the *Zeitschrift f. klin. Medicin,* Bd. xxvi. Heft 3-4. He amplifies his former theory of the excess of uric acid in the blood being due to an excess in the number of leucocytes, retention of this uric acid in gouty persons causing their disease, by suggesting that this retention is due to a granular atrophy of the kidney, which, he asserts, is always present in such cases. Out of 42 autopsies in which kidney disease was found, 12 presented the appearance of "granularatrophie," 30 of other degenerative changes. In all the first 12, uric deposits were found in the joints of the big toes, even although some had never suffered during life from symptoms of gout or rheumatism; in the remaining 30 no such deposits could be found. Granular atrophy of the kidneys in the first series acted as the primary disease, and was the cause of the gout, probably by hindering the excretion of uric acid.

The theory of Horbaczewsky, that the uric acid in the body is largely formed by the breaking-down of nucleic acid compounds with albumin, especially from that contained in the leucocytes, is gaining support from many sides.

In connexion with this hypothesis a paper by Bohland ("Ueber den Einfluss des salicylsäuren Natron's auf die Bildung und Ausscheidung der Harnsäure," *Centralblatt für Innere Medicin,* Jan. 18, 1896), is of much interest. Salomé (*Wiener med. Jahrbucher,* 1885) found that a rapid increase in the amount of uric acid excreted in the urine occurred in healthy individuals after the ingestion of salicylate of sodium.

Haig has lately asserted that he has been able by means of this drug to increase the output of uric acid to thirteen times its previous amount in patients of rheumatic habit. He argues from this that uric acid can be washed out of the body by the free use of salicylate of sodium.

On the other hand, Klemperer, as noted above, and Salomon (*Charitè Annalen,* 1878, Bd. v.), have been unable to find any appreciable quantity of uric acid in the blood of healthy persons, while von Jaksch could only discover traces of it in the blood of patients suffering from acute rheumatism. Again, Schoerndorff

(*Pflüger's Archiv*, Bd. xlv.), found that the administration of large quantities of water caused no increase in the excretion of uric acid, while Salkowski and Hermann (*Archiv für klin. Medicin*, Bd. xliii.), state that even the ingestion of large amounts of alkali has no effect in increasing the excretion of this acid. If these observations be correct, the increase of uric acid which occurs after the administration of salicylate of sodium must be due to an increased production, not to an increased excretion alone.

Bohland's experiments (*loc. cit.*) were designed with the view of elucidating some of the obscure points of this problem. He estimated daily the uric acid and the nitrogen of the urine, and the leucocytes and the red corpuscles of the blood of two practically healthy men, before and during the administration of salicylate of sodium. The doses given were 1·5 gramme (about 23 grains) twice on the first day, and 1·0 gramme (15·4 grains) five times on the following days. In the first case the uric acid in the urine rose 84 per cent., and the number of leucocytes in the blood increased from 7132 per c. mm. to 14,565, or a little more that double. In the second case the increase of the uric acid reached 100 per cent., while the leucocytes numbered 7027 and 10,487 respectively. The output of nitrogen was unaltered.

From these results the author argues that the drug, notwithstanding the testimony of Haig and others, cannot be good for gouty patients, any transient wellbeing from its use being followed by more pronounced symptoms of the disease. Many writers have found it of no lasting benefit. The author hopes to repeat his experiments on gouty patients in the future.

It is interesting to note in this connexion that Neusser (*Wiener klin. Wochenschrift*, 1894) has found that the blood of persons of uric acid diathesis and of those suffering from gout contains a larger number of white corpuscles than in healthy blood.

Kolisch (quoted in the *Revue de Therapeutique*, Nov. 15, 1895), considers that there are three stages in gout—(1), an exaggerated destruction of nuclein, shown by an increased excretion of uric acid in the urine; (2), commencing disease of the kidney, the uric acid normal in amount, but the derivates of xanthine and its congeners increased, in the urine; (3), gouty kidney established, diminution of uric acid in the urine, the xanthine derivatives still further increased. An acute attack of gout corresponds to a sudden destruction of a considerable amount of nuclein. Treatment should be directed towards diminishing the quantity of nuclein in the food, by giving alkalies, little nitrogenous material, especially if in the form of glandular tissue, and by absolutely prohibiting alcohol in any form. Fats may be given, and eggs and milk.

All the evidence which has been recently accumulated on the subject of the pathogenesis of gout goes to prove that the excess of uric acid is caused more by the breaking-down of some special nitrogenous substance in the body than by the insufficient oxidation of uric acid derived from the breaking-down of the ordinary proteids during the course of metabolism. Gout would rather be due to the deficient oxidation of the uric acid normally formed from nucleo-compounds, or to an excess of acid formed from these bodies.

Lysidin (æthenylæthylendiamin), originally recommended in the treatment of gout by Grawitz about a year ago, has not proved of much service in the hands of Klemperer and v. Zeisig (*Zeitschrift f. klin. Medicin*, Bd. xxvii. Heft 5 and 6). They used it in tablespoonful doses of a solution made up by adding 10 parts of the 50 per cent. preparation of lysidin to 200 parts of distilled water. Its use was followed neither by any decrease of pain or swelling, nor by an increase of uric acid in the urine.

In an original paper, "Zur Behandlung der harnsäure Diathese" (*Centralblatt für Innere Medicin*, 1896, No. 2), Rosenfeld and Ogler give the results of their investigations into the influence of various diets and medicines on the excretion of uric acid in a healthy person. The amount of uric acid varied directly with the quantity of proteid ingested, was much increased on a purely fat diet and when fat was added to the proteid. Similarly the addition of sugar to a purely proteid diet raised the amount of uric acid in the urine markedly. To test the nuclein theory nothing but milk was given for some days, a diet rich in nucleo-proteids, with the result that an enormous increase in the uric acid excreted occurred. The addition of urea to the food, or of a new drug—urotropin—diminished the formation and increased the solubility of uric acid. Urotropin, however, irritated the bladder and digestive tract.

OCCASIONAL PERISCOPE ON DISEASES OF THE THROAT, NOSE, AND EAR.

By R. M'Kenzie Johnston, M.D., F.R.C.S. Ed., Assistant-Surgeon for Ear and Throat, Edinburgh Royal Infirmary.

Adenoid Vegetations in the Naso-pharynx.—In a paper read before the Congress of Otologists at Florence, Dr Arslan of Padua gives an account of a careful study of a large number of these cases. He finds that adenoids are very common in Italy, and he looks upon heredity and the dyscrasic diseases as playing a very important part in the etiology of this condition. He looks upon digital examination of the growths as a somewhat brutal proceeding, and as alarming both the patient and his friends, and he much prefers posterior rhinoscopy as a more accurate and certain method of diagnosis. In this opinion he differs from most observers in this country. He always operates under a general anæsthetic, and he considers bromide of ethyl to be incomparably superior, in these cases, to chloroform or any other anæsthetic. He, however, attaches great importance to the quality and purity of the drug, and finds that the best results are obtained by a full dose. Under 15 years of age he administers 10 grammes, while over that age he gives double that dose. The bromide of ethyl has proved eminently satisfactory in his hands, and he has collected over 4000 cases in which its use has been recorded with success in operations of short duration, and has himself only once seen vomiting and headache follow its use, and in this case the drug was impure. He finds it rapid and certain of action, innocuous in the dose he employs, and it is free from the discomfort and risks met with in using other anæsthetics. It does not abolish the reflexes, the vapour does not irritate the air-passages, and the recovery from it is so complete and so rapid that the patient can usually walk out of the room immediately after the operation.—*Annales de l'Oreille et du Larynx*, December 1895.

THE DANGERS OF COCAINE.—The increased use of cocaine as a local anæsthetic has brought into greater prominence the disagreeable and sometimes alarming effects produced by this drug. Dr de Havilland Hall states (*British Medical Journal*, 8th February 1896) that he always combines his cocaine with a 10 per cent. solution of resorcin. This, he finds, diminishes the toxic effect of the cocaine, while at the same time it increases its anæsthetic action. He disapproves of the use of the spray for applying cocaine to the nose, and prefers to apply a definite quantity by means of cotton wool and a suitable holder to the desired part. To combat any bad effects from the cocaine, he always has at hand ammonia and nitrite of amyl, but since he has used the combination with resorcin he has but rarely seen even slight toxic effects produced.

NOVEL METHOD FOR MAJOR OPERATIONS WITHIN THE NOSE.—When an operation on the nose or throat necessitates a general anæsthetic, the patient requires to be placed in the recumbent position. Dr Carl Seiler points out that this places the operator at a disadvantage, because it alters the topographical relation of the parts to the operator, makes adequate illumination of the parts very difficult, and allows blood to flow into the larynx and pharynx, if the patient is placed as usual—on his back or on his side. For some years Dr Seiler has adopted the method of placing the patient, after thorough anæsthesia, upon the table in a vertical recumbent position, with the head projecting, face downwards, over the end of the table. This, he finds, obviates the difficulty of blood running into the larynx and pharynx, and so does away with the necessity for preliminary tracheotomy or plugging the posterior nares. Where possible in such operations, he depends upon the sense of touch rather than upon that of sight, but if *absolutely* necessary to see any part of the nasal chambers which can be seen during the operation, he adopts the simple, if perhaps inconvenient, expedient of lying upon his back under the table. This brings him into the same relation with the patient's nasal cavities that he would have been in had the patient been sitting opposite him in the examining chair. He has operated in this way on numerous cases of post-nasal fibroid polypi, benign or sarcomatous tumours, large rhinoliths and impacted foreign bodies, etc., with ease and comfort in his manipulations, and freedom of anxiety lest blood should choke the patient in spite of all precautions. Nothing is stated as to the risks of the latter to the operator!—*Medical and Surgical Reporter*, November 16, 1895.

PRACTICAL REMARKS ON FOREIGN BODIES IN THE UPPER AIR AND FOOD PASSAGES.—In the *Medical Chronicle* (vol. iii. No. 1) there is an interesting and valuable paper by Felix Semon on the above subject. In the large majority of his cases, he found that the foreign body at the time of the consultation was no longer present. The after-effects, viz., pain, pricking or sensation of the presence of a foreign body, apparently remains longer in this than in other parts of the body. At the same time, the opinion that a foreign body is no longer present should only be expressed after a careful and searching examination of all the parts concerned, and the positive exclusion of the possibility of a foreign body being actually impacted. The examination should always be begun by a careful inspection with a good light, and only after this method has been thoroughly exhausted should the finger or any instrument be introduced into the throat. It should be remembered that the power of localisation of sensations in the throat is very defective, and hence the examination should not be limited to one part of the throat. A patient who has an impacted substance between the tonsils or in the naso-pharynx will often locate the sensation as if the foreign body were in the laryngo-tracheal region. Strings of tenacious saliva stretching across the throat so closely resemble a fish bone, that prolonged and careful examination may be necessary before the actual bone can be recognised. With regard to treatment, Semon emphasizes two important principles—(1), No foreign body the presence of which has been actually detected ought to be allowed to remain impacted, even if at the time it does not produce any serious symptoms; and (2) no attempt should ever be made to ram an angular or pointed foreign body forcibly down. The actual method of removal must of necessity depend greatly upon the nature and size of the foreign body, and the locality in which it has become impacted.

ALARMING HÆMORRHAGE FOLLOWING OPENING OF THE ANTRUM.—Empyema of the antrum of Highmore is by no means a rare disease, and its treatment necessitates the opening of the cavity by one of several methods, so that regular irrigation may be carried out as long as may be required. In the majority of cases an opening is made by drilling through an alveolar process, an operation usually performed without special difficulty, and with but little hæmorrhage. Dr Scheppegrell, of New Orleans, records an interesting case in which he drilled through the alveolar process, at the site of first molar tooth, in a lady aged 33, and in which such profuse hæmorrhage immediately followed that the cavity had to be plugged with iodoform gauze. For about a month each time that the gauze was carefully removed, the bleeding recurred as violently as ever. Finally, the packing was removed gradually in the course of several days, with only a slight amount of hæmorrhage, and the opening allowed to close. The treatment was then continued through the nostril. There was no hæmophilic tendency in the patient, and Scheppegrell suggests that the hæmorrhage might have been due to an angiomatous condition of the mucous membrane of the antrum at the point that the drill entered the sinus.—*Journal of Laryngology,* vol. ix. No. 9.

SURGICAL PERISCOPE.

By Kenneth M. Douglas, M.D., F.R.C.S. Edin.

INFECTION WITH TUBERCLE THROUGH THE GENITAL ORGANS.—Prof. Dobroklonsky (St Petersburg) has made investigations as to the possibility of occurrence of this infection. It is granted that primary tuberculosis of the genital organs beyond doubt exists in both sexes, and at all ages, though more commonly during the period of sexual activity, and in those parts which lie farthest from the body surface rather than those immediately exposed by contact during sexual intercourse. The questions Prof. Dobroklonsky enters upon are: the possibility of an *ascending* infection through the genital organs,—whether semen will convey the infection,—and whether it does so wherever tubercular disease may be present in the body, or only when the genital organs are diseased. Careful examination was made of twenty-five bodies after death from phthisis, to determine the state of the genital organs; the semen was examined and inoculated in guinea-pigs. Only in one instance was a tubercular lesion found (in the epididymis); this case gave the only positive result after inoculation with semen, and a bouillon culture from the semen produced general tuberculosis when introduced into the genital organs of a female animal. The conclusions deduced are—(1) That the poison may enter by the genital tract in men as in women, and that this mode of entry is "probably of great importance;" (2) that infection occurs only where tubercle exists locally in the genital organs; (3) that as this is relatively uncommon, infection of this sort is correspondingly rare; (4) that the local evidence of disease is often long unnoticed, and therefore the risk of infection increased.—*Centralblatt für die Krank. des Harn ū Sexuale Organen,* Band vi. Heft 10.

THE BACTERIA OF CATGUT AND ITS STERILIZATION.—N. Zajacskowski has in various kinds of raw catgut found two micro-organisms, one identical with Brunner's catgut bacillus, the other of different appearance and properties, and named by Zajacskowski β catgut bacillus, as opposed to Brunner's a bacillus. β bacillus is of long slender rod shape, with rounded ends, very mobile, and giving culture results differing from those of the a bacillus. The research as to the resistance offered by these organisms to sterilizing methods is of interest; both are highly resistant to heat—dry or moist—and to antiseptic agents, and both were found to be of importance, as increasing by their presence the virulence of pyogenic organisms, though their inoculation or intravenous injection as a pure culture gave rise to no reaction. When injected with a dose of streptococci, which, used by itself, produced merely a local reaction, there followed death from septic poisoning in two or three days. An elaborate method for the sterilization of catgut is recommended to destroy the action of all organisms, viz., 24 hours in oil of juniper, 12 hours in ether, 60 hours in hydrochloric acid (1–500), 2½ hours' exposure to a temperature of 150° C., and finally, 2¼ hours in boiling xylol.—*Central. für Chirurgie*, No. 1, 1896.

CASTRATION FOR ENLARGED PROSTATE.—B. J. Przewalski gives the results of his experimental observations upon dogs, and concludes that the immediate cause of the resulting atrophy of the prostate is division of the plexus deferentialis, and that this procedure done on both sides (with or without division of the vas deferens) leads to simultaneous atrophy of testicles and prostate. The first change after operation is swelling of the gland; upon the third day atrophy begins, and in dogs it is evident after two or three weeks. Removal of one testicle did not induce atrophy of the prostate upon the same side, and atrophy of the testicle from disease does not always lead to prostatic atrophy.—*Ibid.*

PANCREATIC CYST; OPERATION; RECOVERY.—Dr Otto Ramsay (Baltimore) records this case—that of a woman aged 38. The early symptoms were epigastric and umbilical pain, nausea, and vomiting; after two months a small elongated swelling was noticed, which increased in size towards the left hypochondrium and became more prominent and spherical; the patient became emaciated and weak, and had much nausea; the skin was of yellowish-white colour, and the tongue furred. On examination an ovoid smooth tumour was palpable, the swelling reaching the right semilunar line and being tense and fluctuating; the left side of the abdomen was prominent and the chest-wall pushed out. The diagnosis having been made, the question of operation was considered, and extirpation being negatived, a transverse incision below the costal margin was made in the left flank where the tumour was prominent; the cyst presented in the wound, three litres of fluid were withdrawn through a cannula, the wall was then incised and stitched to the wound, the cavity being packed with sterilized gauze. A little of the packing was removed each day, and afterwards a rubber tube and eventually a silver tube inserted. As a result all the symptoms yielded, the woman gained flesh, and had normal and regular stools. At the time of publication (seven months after operation) a fistula persists with a free discharge. The fluid withdrawn was thin, slightly sticky, with alkaline reaction, and specific gravity of 1010; on boiling, serum albumin and serum globulin were precipitated;

it emulsified fat slightly; it contained no mucin; the microscope showed granular cells, granules, a few vacuolated cells with nuclei, and many red blood corpuscles.—*Annals of Surgery*, December 1895.

"GARTER" INCISION FOR CURE OF VARICOSE VEINS OF THE LEG.—Dr Moir (I.M.S.) showed to the Calcutta Medical Society three patients in whom he had practised this operation—on both limbs in two instances. A circular incision down to the deep fascia is made an inch or two above the thickened discoloured skin; the subcutaneous vessels are ligatured, and the wound closed by continuous suture. This procedure forces the venous circulation into the deeper channels, where risks of varicosity are probably less. Dr Moir would limit the scope of the operation to severe or obstinate cases, but in these believes it will give a good result. The cases recorded are, Dr Moir points out, too recent to allow of one forming a correct opinion as to the value of the method.

Part Fifth.

MEDICAL NEWS.

THE SCOTTISH POOR LAW MEDICAL OFFICERS' ASSOCIATION.

THIS is an Association recently formed, whose objects are to improve the status of parochial medical officers, chiefly by putting them on terms of equality with their fellows in England and Ireland. It is well known that under the present system parochial practitioners suffer from many disadvantages. Chief among these is the uncertain tenure of their office. This is of such a nature that they can be removed without any cause being assigned. The prejudice of one or more members of a parochial board against a man, the reforming zeal, untempered by experience or sound principle, of another, find only too numerous victims in the ranks of the medical staff. In urban districts the effects of this, though distinctly felt, do not press so hardly as they do in country parishes, in which, on account of the paucity of population, there may not be sufficient work to maintain more than one practitioner. In these circumstances dismissal from the parochial service means that a competitor will be imported into the district, and that the limited field will have to support two men, possibly two households, instead of one, and consequently each will have to content himself with a fraction of the remuneration the neighbourhood affords, which in its entirety is no more than sufficient for one. The power of dismissal, without responsibility on the part of the Board, is not at all unknown as a lever for coercing a doctor in matters quite outside the range of parochial duty, and within a very recent period a Scottish Parish Council, advertising for a medical officer, made it a condition of the appointment that the fees for *private work* should be fixed by the Council! Is it any wonder that under such circumstances the energies of the doctor should be directed more towards satisfying his employers than doing his best for his patients; of using an inferior drug or appliance when a more expensive one was needed; of unduly restricting the "extras" on which the comfort, if not cure, of the patient depends? The marvel rather is that so few cases of abuse are heard of. Again, the medical man may toil on, never off duty by day or night, until age or infirmity render him unfit for duty, which nevertheless he strives to fulfil, because his salary has precluded him from saving as much as would enable him to retire to the enjoyment of a well-earned repose. Such cases are constantly occurring, and the new Association is making an effort to meet them. Fixity of tenure is one of the objects aimed at. That a parish doctor should hold his appointment *ad vitam aut culpam*, like any other high-class civil servant, is a proposition to which no sensible person is likely to object. For observe what it involves. It means that the doctor shall be absolutely free to do his work as his conscience directs, without a fear that his services may be dispensed with because he recommends some clothing or allowance to a poor widow, or boots to her children, against the wish of his council; still less that his account for private services to members or their belongings should be considered a fault to be punished by deprivation of his parochial stipend. A superannuation allowance is another desideratum of the Association. That is recognised both in England and Ireland as a right and just thing, and it can hardly, therefore, be considered an illegitimate object in Scotland. The remuneration of medical officers is another direction in which it is purposed to effect improvement. Hitherto it has been tacitly assumed by many boards that anything in the way of doctoring is good enough for paupers. The Association maintains that if the State undertakes to provide medical relief to those whose circumstances do not permit them a choice in the matter, the relief provided shall be of as high a character as it is possible to have; and since it is necessary that skill and experience in any line of life must be paid for, it further maintains that the pay offered should be adequate to attract and retain the services of properly qualified and experienced men. It wishes to see an end put to the idea that the man who offers to attend the poor of a parish at a lower rate than his neighbour is by that fact to be deemed the proper person to be appointed. To properly fix the salary it will be necessary to draw a scale based on such considerations as density and character of population and accessibility as regards the various portions of the district. Thus in a thickly populated city the number of cases requiring attention might be considerable, but so closely situated that in a short space of time a very large number of visits may be made; while in a Highland or hilly district, where from absence of roads, or from separation of different parts by wide arms of the sea, the time occupied in making only a single visit may be very long and attended by danger.

It will thus be seen that the new society is inspired by no narrow or selfish motives. It asks for the Scottish parochial medical officers only what has been already granted to those doing similar work in the sister countries; and it can hardly be denied that the first result of the realization of its objects would be to make the service more efficient and adequate to the functions it has to exercise, and therefore of greater value, not only to the pauper class, but to the entire community.

The inaugural dinner was held in the Windsor Hotel, Glasgow, on the evening of 31st January. The chair was occupied by Dr William Bruce of Dingwall, who is the direct representative in the General Medical Council of the profession in Scotland. The croupier was Dr Wm. L. Muir, the President of the Association. Among those present were Mr Alexander Cross, M.P. for Camlachie; Mr James Brand, chairman of the Barony Parish Council; ex-Bailie Martin, Mr Andrew Wallace, inspector for Govan parish, along with members of the Society from the coast and country, as well as those from the city and suburbs. The Chairman, in proposing the "Scottish Poor Law Medical Officers' Association," enlarged on the necessity for such a Society, and explained its objects. He spoke of the work done and the responsibilities incurred by parish medical officers, more especially of those working in remote, sparsely-populated districts, and he advocated the reform of parochial medical administration. He commented on the fact that suitable house accommodation was invariably provided for the clergyman and schoolmaster of a district, while the medical officers' requirements in that respect were completely ignored. He considered that the parish doctor should be recognised as an independent civil servant with a salary suitable to his responsible and arduous duties, and that he should in large parishes be provided with a properly qualified assistant. The views advanced by Dr Bruce were endorsed by Dr William L. Muir, who emphasized the necessity for the medical officer to be independent of the local authority in order that his responsibilities to the poor of his district might be met without risking the loss of his appointment. Mr James Brand, responding to the toast of the "Parish Councils of Scotland," took occasion to express his sincere sympathy with the objects of the Society, which had his approval long before he heard them formulated, and he assured the meeting that he would gladly assist in furthering these objects. Mr Wallace spoke in similar terms.

The membership of the Association is open to parochial medical officers past and present, and to all others having an interest in poor-law work. It already has members from all parts of Scotland, and it is expected that in time there will be local centres in most of the large towns. It is managed by an executive elected annually, consisting of the officials, with six members, who complete the Council. The following is the present administration:—Dr William Bruce, Dingwall, direct representative in the General Medical Council, is the *Honorary President;* Dr William L. Muir, Glasgow, *President;* Dr David Couper, Glasgow, *Vice-President;* Dr Matthew Martin, Glasgow, *Treasurer;* Dr Alexander M. Murdoch, 17 Broad Street, Mile End, Glasgow, *Secretary.* The additional members are—Drs Campbell, Core, Cullen, Finlay, Fortune, and Wallace.

We have received the Memorandum and the Articles of Association of the Scottish Medical Defence Association, Limited. The Association took its origin in the Fifeshire Medical Association, with the feeling that, owing to the differences between English and Scots law, an individual Association was more desirable than a branch of one of the English Associations. As to the advantage of such an Association, if well managed, there can be no question, having as its objects the protection of the interests of medical practitioners practising in Scotland, and the settlement of ethical questions arising between medical men. We cordially recommend the Association to the notice of our readers.

Shipowners' Liability for Medical Attendance.—An important case to shipowners has been decided in the Ayr Sheriff Court. The question raised was as to the liability of a shipowner for surgical attendance rendered to a seaman on board ship in a home port. The action was at the instance of Dr Charles M. Stewart, Govan Road, Glasgow, who sued the Garnock Steam Shipping Company, Limited, for £1, 1s., his professional fee for services rendered to M. Costello, fireman on board the steamer Burnock, who sustained injuries through falling down an open hatch while the vessel was lying at the general terminus, Glasgow. The defenders denied liability on the ground that the ship being in a home port, the master was not entitled to pledge the shipowners' credit for such surgical attendance. Sheriff Orr Paterson, before whom the case was tried, found that the Merchant Shipping Act of 1854, section 228, sub-section 3 (re-enacted in the Act of 1894), and which provides that "the expense of all medicines and surgical or medical advice and attendance given to any master, seaman, or apprentice whilst on board his ship shall be defrayed by the owner of such ship," applies to the present case, and that the defenders were therefore liable to the pursuer. He accordingly gave decree for the doctor's fee of £1, 1s., and £3, 10s. of expenses.—*Liverpool Journal of Commerce.*

Thomas Keith.—In a kindly and appreciative article, which occupies the first place in the February part of the *Brooklyn Medical Journal,* Professor Alex. J. C. Skene gives to the world his reminiscences of the late Thomas Keith, "a remarkable man and a great surgeon." To our readers some of Professor Skene's remarks concerning the "weird-looking, gaunt, silent man," whom none who saw him in our streets ever forgot, may be of more than passing interest. We quote, almost at random, from the article above referred to.

"When Keith had become known as the most successful operator of his time for ovarian and uterine diseases, the question was, 'What is the secret of success of this master of his art and hero among men?' That question has never been fully answered. Parts of the secret have been revealed from time to time by those who have seen him at work and been impressed with his secret in operating, but that was only a part of a great whole. His superior mentality, quick, clear perception, and wonderful co-ordinating power which enabled his hands to obey his will; his extraordinary power of concentration of thought, his intense love of his art, and his thorough training, theoretical and practical, in all branches of medicine and surgery, all contributed to make him the man he was. He was recognised as a superior diagnostician; and possessing sound judgment in estimating the general condition of patients and the value of treatment—medical and surgical—for their relief, made him a master in selecting his treatment, preparing his cases for operating, and in their after treatment. To all these were added sterling honesty and heroic moral and intellectual courage that enabled him to withhold his hand, or go boldly, fearlessly forward, as occasion required, utterly unmindful of consequences to himself. He possessed all requisite knowledge and skill required in his art, but none of that worldly wisdom of the trimmer which enables one to take precautions for self-advancement.

"A few words remain to be put down here regarding Dr Keith as he appeared to the profession and people of this country. Here, as in his own country and elsewhere, Dr Keith was best known and most admired by those of the highest intelligence, culture, and moral worth. The greatest American gynecologist, J. Marion Sims, was a devoted friend and enthusiastic admirer of Dr Keith, and has said and written many beautiful things of him. Sims appreciated the work of his friend and acknowledged it to be the best that he had seen, and he admired the man with an enthusiasm that was characteristic of the great, warm-hearted, broad-minded American."

Royal College of Physicians, Edinburgh, Royal College of Surgeons, Edinburgh, and Faculty of Physicians and Surgeons, Glasgow.—The Quarterly Examinations for the Triple Qualification in Edinburgh took place in January, with the following results:—

First Examination.—Four Years' Course: Of 24 Candidates the following 11 passed:—Alfred John William Noble, Fraserburgh; William O'Sullivan, Killarney; Joseph Horgan, Kenmare; Francis Carter, Lancashire; Alfred Sigismond Powell, Kingston; Eldred Ladyman, Preston; William MacKirdy, Rothesay; Edward Bennett, Nelson; James MacRae, Beauly; George Robert Harland, Whitby; and Timothy Murphy, County Cork; and three passed in one division of the Examination. *Five Years' Course:* Of 28 Candidates the following 11 passed:—Edith Neild, Plymouth; Robert Jackson Mackay, Aberdeen; Charles Richardson White, Edinburgh; George Henry Fullarton Graves India; Edward Parker Haythornthwaite, Cumberland; David Coffey, Ballinahinch; John Blunt Swinden, India; William Arthur Dawson, Bandon; Agnes M'Lean Black, Madras; James Patrick Lavery, Armagh; and Lizzie Beatty, Ballymena; and six passed in one or two divisions of the Examination.

Second Examination.—Four Years' Course: Of 52 Candidates the following 21 passed:—Maurice M'Sherry, Cookstown; Thomas Killips Greenfield, County Down; George Crofts Beamish, County Cork; Robert Hamilton Fleming, Lanarkshire; Robert Philip Graham, Glasgow; Bertwine Goldsmith Roscoe, Liverpool; John Robert Askew, Barrow-in-Furness; Eldred Ladyman, Preston; John Kirkpatrick, Ireland; Anthony Joseph Rencontre, Jersey; Samuel David Clements, Leitrim; Denis Nyhan, County Cork; Edward Rambant Kellett, Carlow; John Henry O'Sullivan, Queenstown; Thomas Harold Waddington, Leeds; John Titus Newton, England; Charles Herbert Thackrah, Halifax; Robert Stenhouse Williams, Liverpool; James Charles Bouchier-Hayes, County Limerick; Percy Ashworth Wedgwood, London; and Clayton Simpson, Cumberland; and 13 passed in one or two divisions of the Examination. *Five Years' Course:* Of 12 Candidates the following 8 passed:—Abraham Johannes Benjamin Albertyn, Cape Colony; John Tobin, County Cork (with distinction); Henry Fowler, London; Thomas Neville, County Cork; James Ross, Ballymena; Charles John Greig, Shetland; Vaughan Bateson, Harrogate; and James Sharp Hamilton, Newry.

Third Examination.—Five Years' Course: Of 8 Candidates the following 7 passed:—James Murray, Newcastleton; John St John Murphy, Middleton; Arthur Fletcher Jones, Chester; George Herbert Arthur Taylor, Ayrshire; Joseph Martin Donovan, County Limerick; Richard Francis Flood, Surrey; and Georgina Collier, Lisburn.

Final Examination.—Of 137 Candidates the following 65 passed and were admitted L.R.C.P.E., L.R.C.S.E., and L.F.P. & S.G.:—Elizabeth Henderson, London; William Henry Rowthorn, Nottingham; Arthur James Troughton. Norfolk; Charles Graves, Dublin; Arthur Bishop Carey Orchard, Brynmawr; Emilia Margaret Guthrie, London; Richard Wolfendale, Staffordshire; Bryce Johnston Macaulay, Wishaw; Walter Pearson, Manchester; Martha Florence Armitage, Staffordshire; Selim Hishmeh, Jerusalem; David Alexander, Jamaica; Charlotte Susannah Vines, Agra; Samuel

Robb, Drumlish; Elizabeth Mary Hooper, Suffolk; James Blewitt, Kilmallock; Henry Greaves Rochdale; Percy Sandiland Vesteven, Holloway; Robert Wilbond, Woolwich; Edw. Walter Scharenguivel, Ceylon; Percy Ridley Gange, Faversham; Herbert Arthur Luke Banham, Burnsley; Edward Buller Hicks, Easingwold; Joseph William Furey, Killyleagh; Daniel Urban Hanly, Limerick; Denis Hennessy, Cork; John Collingwood Thompson, Durham; Arthur Wellesley Ball, Liverpool; Annie Gillespie, Newry; Solomon Harold Richards, Surrey; Joseph O'Meara, Banff; Walter Squibbs, Somerset; John Ewart Martin, Liverpool; Thomas Aspinall, Hindley; Andrew Morris Stewart, Alloa; Eric Norham Scott, Queensland; John Edmund O'Ryan, Youghal; Thomas Canning Hunter, Pontypridd; Patrick Bernard Molony, County Limerick; James Munce, Newtownards; Alexander Jason Hassard, Monk town; Richard Lister Park, Bury; William Barclay Thomas, Glasgow; James M'Allister Ramsay, Airdrie; Timothy O'Callaghan, County Cork; Hendrik Jan Var Brockhurzen, Holland; Douglas Albert Robinson, Melbourne; Thomas Francis Elmes, Cork; Henry Edward Birmingham, County Galway; Thomas William Herbert Young, Surrey; Thomas Matthew Donovan, County Cork; Thomas M'Kinlay Wotherspoon, Glasgow; Martin Cleary, County Mayo; George Gillon Irving, Calcutta; William Hugh Jones, North Wales; Thomas Bannerman, Montreal; George Henry Field, Ontario; Maurice Hickey Enright, County Kerry; Thomas Graeme Dickson, Buxton; Hugh Sommerville Dobie, Keighley; Ernest Brice, Leicester; Alexander M'Lellan Wilson, Glasgow; Benjamin Hilton Leigh, Peru; William John Nixon Davies, India; Charles Herbert Harris, Staffordshire; and 13 Candidates passed in one or more divisions.

List of successful Candidates for Commissions in the Medical Staff of Her Majesty's Army at the recent Examination in London.

Order of Merit.	Names.	Number of Marks.	Order of Merit.	Names.	Number of Marks.
1.	Birrell, E. T. F.,	2740	6.	MacDougall, A. J.,	2207
2.	Morris, A. H.,	2308	7.	Riddick, G. B.,	2135
3.	Archer, S. A.,	2297	8.	Hewetson, H.,	2107
4.	Cochrane, E. W. W.,	2223	9.	Clements, R. W.,	2000
5.	Swably, M.,	2210			

British Medical Service.—List of Surgeons on Probation of the Medical Staff of the British Army who were successful at both the London and Netley Examinations.

January 31*st*, 1896.

No.	Name.	Combined Marks.	No.	Name.	Combined Marks.
*1.	Brereton, F. S.,	5311	6.	Waring, A. H.,	4192
2.	Statham, J. C. B.,	4438	7.	Hooper, A. W.,	4120
3.	Cooper, R. M. C. H.,	4398	8.	Ward, W. A.,	4094
4.	Hayes, E. C.,	4322	9.	Forrest, E. G.,	3876
5.	Probyn, P. J.,	4274			

* Gained the Martin Memorial Medal and the Parke's Memorial Medal.

Indian Medical Service.—List of Surgeons on Probation of the Indian Medical Service who were successful at both the London and Netley Examinations.

January 31*st*, 1896.

No.	Names.	Combined Marks.	No.	Names.	Combined Marks.
*1.	Cochrane, A. W. R.,	5139	10.	Dawes, C. D.,	4219
2.	Clemesha, W. W.,	5039	11.	Perry, E. L.,	4193
†3.	Bakhla, C. R.,	4994	12.	Pinchard, M. B.,	4189
4.	Black, J. A.,	4913	13.	Niblock, W. J.,	4175
5.	Wilson, R. P.,	4703	14.	Harrison, C. B.,	4173
‡6.	Lindesay, V. E. H.,	4670	15.	Payne, E. L. F.,	4093
7.	Robertson, J. C.,	4459	16.	Lalor, N. P. O'G.,	4040
8.	Rainier, N. R. J.,	4430	17.	Symons, T. H.,	4025
9.	Kukday, K. V.,	4427	18.	Rost, E. R.,	3813

* Gained the second Montefiore Prize.

† Gained the Herbert Prize of £20, the first Montefiore Prize of 20 guineas, the Prize in Pathology presented by Surgeon-Major-General Hooper, I.M.S., and the de Chaumont Prize in Hygiene.

‡ Gained the MacLean Prize for Clinical and Ward Work.

Surgical Essay Prize, 1896.—We beg to direct attention to a notice in our Advertisement sheet, page 2, regarding a Prize of Thirty-five Guineas, offered by the Royal College of Surgeons, Edinburgh, for the best Essay on a Surgical Subject by a Fellow or Licentiate of the College.

The Journal of Anatomy and Physiology, Vol. XXX., January 1896, though containing no papers of much merit, has several of interest. The article on the Morphology of the Limbic Lobe (continued) is instructive and suggestive; and the account of the Anatomy of Two Symelian Monsters and of an Anencephalous Fœtus will repay perusal. A well-written article on Urinary Calculi is contributed by Sir George M. Humphrey; and the record of a careful piece of work—Relation of Bile Salts to the Secretion of Urea—is given by Dr Edington.

Glasgow Medical Journal, December 1895, contains an article on Eponymic Structures in Human Anatomy, which will be useful for reference; the series of articles on Chronic Degeneration of the Central Nervous System, by Dr Monro, is continued; and the first of a series of papers on the Connexion of Cholera with Pilgrimages is an important contribution to the subject.

Emol-Keleet Soap.—We have been favoured with specimens of this soap for trial, by the Keltie Products Company, Limited, Dunning. It is stated on the tablets that it is specially recommended for delicate skins, as it contains no free soda or potash. The value of emol-keleet itself as an emollient, and as a wholly innocuous and pleasant dusting-powder, has now been generally recognised. But it is a new idea to utilise the former property by incorporating it with a pure neutral soap. The principle is to produce the effect of a superfatted soap without the drawbacks which have in some quarters been urged against excess of free unsaponified fat. From careful testing of its action we believe that the combination is a satisfactory one. The emol-keleet soap possesses high detergent qualities; it has proved quite unirritating to delicate skins, and even in cases of eczema past the acute stage, and in some dry conditions of the epidermis, it has occasioned no aggravation or recrudescence of symptoms. It appears to have the power of cleansing the surface of the integument from all accidental impurities, without at all affecting the cohesion of the boundary cells, thus removing from the keratin any extraneous matter, while not disturbing its polish. Though best employed with warm or tepid water, it acts also well with cold. We regard this soap as distinctive in character, and as marking an advance in manufacture of a valuable kind. We have reason to know that it has been prepared at the suggestion and under the direction of an eminent analytical chemist, so that it is compounded in a thoroughly scientific manner. It is also proposed to make a household soap on the same lines. This should have a wide future before it, since a household soap which, while efficient as a cleanser, will not damage the hands of the user, and obviate the necessity for the employment of so-called washing-powders and chemicals, at present so extensively had recourse to, is a desideratum.

CORRESPONDENCE.

(*To the Editor of the Edinburgh Medical Journal.*)

Dear Sir,—After reading the letter of Dr Sternberg, Surgeon-General of the U.S.A., in which our learned friend honours me by discussing at some length my communication to the Royal Academy on the "Tetracoccus versatilis," and also my preventive inoculations with contaminated mosquitoes, I must beg that in the next issue of the *Edinburgh Medical Journal* you will authorise the insertion of my reply.

Dr Sternberg, whose high competence deserves all my respect, brings forward against the significance of the tetracoccus in the etiology of yellow fever some of the facts observed by him, but omits to mention others. This reticence I deem prejudicial to the cause which I advocate, and in view thereof I take the liberty of recording those data, so as to enable the readers of the Journal to judge for themselves.

He says that the tetracoccus versatilis[1] is frequently found in Havana upon the surface of the body of healthy individuals and in the atmosphere, but omits to add that before coming to Havana (in 1888) he had found the same micro-organisms in Vera Cruz upon the skins of yellow fever patients, and of some cases of intermittent fever, in which the diagnosis appeared to him doubtful, surmising that they might have been abortive forms of yellow fever. Such were the facts set down in the manuscript copy of his preliminary Report, which he kindly handed to me, in 1888, in order that I might take note of its contents.

In the same manuscript Dr Sternberg stated that he had received from Dr Burgess (of Havana) pieces of skin from the thoracic, epigastric, and lumbar regions, cut out five minutes after death, from a typical case of yellow fever, and that upon examining those pieces in histological sections he had found upon the surface, concealed in the folds of the cuticle, various micro-organisms, among these "tetrads similar to those of Finlay"; but none were found in the rete mucosum, nor in the corium, nor in the subcutaneous tissues.

That the *tetracoccus* germs should exist in the atmosphere of localities where yellow fever is endemic I do not doubt, for I have demonstrated that contaminated mosquitoes carry them about, and may easily scatter some in the air. They cannot be very abundant, however, if we are to judge from the following experiment:—On the 3rd of May 1889, by Dr Sternberg's request, I prepared an agar-agar plate, which I left during ten minutes exposed to the air of my consultation-room. This plate, after being kept two days in Dr Sternberg's stove, showed some hundred colonies of various colours and three mycelial fungi. We examined such of the colonies as from their appearance we judged might belong to the M. tetragenus, but only found *one* which presented the morphological and cultural characters of tetracoccus versatilis.

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[1] I substitute the name of "Tetracoccus" for the reasons already given in my paper, and also because, after following with some care the development of that microbe, I understand that it is not, properly speaking, a typical "tetragenus," but rather belongs to a class of micrococci which the German bacteriologists denominate "Semmel-Kokken," as described and figured by Fraenkel and Pfeiffer in their Bacteriological Atlas (1st ed., Pl. II. fig. 4). In these cocci, after the segmentation of the protoplasm in two perpendicular directions, the elements of the tetrads that result are not at first globular, but flattened or oval.

My opponent also declares that his extensive researches have shown that the micrococcus in question is not found in the blood nor in the tissues of yellow fever patients. Regarding the blood of living patients, Dr Sternberg probably alludes to his investigations in Brazil, and to the dry films of simple yellow fever blood from which in 1879 he obtained the admirable photographs which appear in the Report of the Commissioners who visited us in that year. This must be inferred from the fact that, notwithstanding his having once obtained the tetracoccus versatilis in his cultures of finger blood from a yellow fever patient in Rio Janeiro, who afterwards came to Havana (in 1888 and 1889), he refused to continue that investigation, alleging that his opinion was already formed, and that here he would only examine post-mortem materials. With regard to these, Dr Sternberg acknowledges that he has found sometimes the tetracoccus in his cultures from contents of the stomach and intestines of yellow fever cadavers; once he obtained it from his cultures from the liver, and among his histological sections of the kidney he once found tetrads resembling those of tetracoccus versatilis. It must be remembered, however, that Dr Sternberg takes for granted that the tetracoccus must necessarily manifest itself, in the tissues and in blood preparations, in the shape of tetrads, an assumption which is inadmissible, inasmuch as the microbe does not always present itself in that form in pure artificial cultures, and I have reason to believe that its growth within the body tends to impede the formation of tetrads in the same manner as it diminishes its chromogenous properties. As to the size of the cocci, the eminent bacteriologist well knows that it varies in one and the same preparation, for which reason he proposed to qualify it as "versatilis"; and the fact that some of the germs are apt to pass through porcelain filters shows how minute they may be.

The most notable item in the letter of your distinguished correspondent is undoubtedly the crucial test which he proposes we should carry out in order to definitely solve the question, viz., the inoculation of pure cultures of tetracoccus versatilis to susceptible subjects. As to our personal responsibility, "he ventures to predict that the result of the experiment will be to show that it is entirely harmless for man, or at most a slight abscess may form at the point of inoculation." Unfortunately for the prophecy, such an abscess is precisely what might least be expected from the inoculation with a pure culture of tetracoccus, for it so happens that I have never observed any suppuration whatever either at the site of inoculation or in the tissues of the numerous rabbits which in my experiments have died in consequence of subcutaneous injections with that microbe.

In view of experimental results, I consider as eminently perilous and unjustifiable the test proposed by Dr Sternberg. The assertion in his final paragraph, that "a great number of saprophytic micro-organisms kill young rabbits when injected into the peritoneal cavity or beneath the skin in the quantity used by me (4 to 10 c. c.)," is equivalent to saying that under such circumstances the microbe is really pathogenous, and justifies the inference that for other animals more susceptible than the rabbit it would be so in much smaller doses.

In his reference to my preventive inoculation with contaminated mosquitoes Dr Sternberg forgets that my object has not been to provoke a severe attack of yellow fever which might endanger the life of my clients. On the contrary, I have endeavoured to imitate the natural process through which some foreigners acquire a partial or complete immunity after having experienced one or two attacks of mild acclimation fever, or without any morbid manifestation whatsoever.

In the *Cronica Medico-Quirugica* of May 1895 (pp. 256 to 260) may be seen my statistics brought up to that date; whereas the figures quoted by Dr Sternberg only reach to December 1893. In a footnote at p. 175 of the April number I have stated the considerations which might induce me to reconsider the significance of tetracoccus versatilis in yellow fever.[1]

Finally, I cannot but regret the insistance of the opponents of my tetracoccus in refuting it with hypothetical arguments when they might so easily repeat my experiments and compare their results with my own.—With thanks, etc., C. FINLAY.

HAVANA, *Jan.* 16, 1896.

(*To the Editor of the Edinburgh Medical Journal.*)

WAR DEPARTMENT, SURGEON-GENERAL'S OFFICE,
WASHINGTON, *January* 30, 1896.

SIR,—I send you herewith a copy of a letter which I shall mail this day to Dr Santos Fernandez, Editor of the *Cronica Medico-Quirugica* of Havana.—Very truly yours,

GEO. M. STERNBERG.

WAR DEPARTMENT, SURGEON-GENERAL'S OFFICE,
WASHINGTON, *January* 30, 1896.

DEAR SIR,—I have just received a paper, by Dr Harrison G. Dyar, on certain bacteria from the air of New York city, which will be interesting to your readers, inasmuch as it demonstrates the fact that my micrococcus tetragenus versatilis is quite common in the air in New York city, and consequently cannot be the specific infectious agent in yellow fever, as is maintained by our friend Dr Finlay. Dr Dyar reports that he found it five times in the air of the College hallway (College of Physicians and Surgeons, New York), and once in the air in 59th Street. He had an authentic culture brought by me from Havana with which to compare his cultures. He also finds this micrococcus to be identical with micrococcus tetragenus flavus, a culture of which he obtained from Germany (from Kràl's laboratory). It is evident, therefore, that this is a widely-distributed saprophytic organism, which can have no possible connexion with the etiology of yellow fever.—Very truly yours, GEO. M. STERNBERG.

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[1] See *Edinburgh Medical Journal*, vol. xl. pp. 35, 328, 414, and vol. xli. pp. 513, 782.

Dr Santos Fernandez,
Calle del Prado, Numero 105, Havana, Cuba.

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Part First.

ORIGINAL COMMUNICATIONS.

I.—CLINICAL LECTURE ON DIABETES MELLITUS.

By ALEXANDER JAMES, M.D., F.R.C.P. Ed., Physician to the Royal Infirmary; Lecturer on Practice of Medicine, Edinburgh.

GENTLEMEN,—We have had in our ward lately a number of cases of diabetes mellitus, distinctly greater than usual, and we find on inquiry that a similar experience has fallen to the physicians in other parts of our Infirmary. On inquiring of Dr Gillespie, our Medical Registrar, I found that for the last seven years the numbers of cases treated for this disease in the hospital have been as follows:—1888–89, 16; 1889–90, 17; 1890–91, 23; 1891–92, 27; 1892–93, 32; 1893–94, 42; 1894–95, 30. It will therefore be seen that there has been a very considerable increase in the number of cases admitted during the last three years. Dr Gillespie has further pointed out to me that there were three periods during which these cases were specially numerous, viz., October and November 1891, December and January 1892–93, and February and March 1894. It is noteworthy that each of these periods coincides with or follows periods during which epidemic influenza was noted to be specially prevalent. Remembering the depressing effect of influenza on the bodily nutrition, we are not surprised at such results. Doubtless influenza has left other affections in its train, and doubtless also certain of our cases of diabetes mellitus can be shown to be ascribable to other etiological factors, but the special frequence of diabetes during late years, and its association, as regards time, with influenza, are well worthy of remark.

The case of diabetes mellitus which I propose to discuss with you to-day is that of a man, T. L., æt. 50, a labourer, who was admitted to the Infirmary on 31st October 1895. His complaints were that he was always hungry and very thirsty, and that he had to make water with great frequency.

His family history is fairly satisfactory, showing no tendency to diabetes nor to any other constitutional complaint. He has had the ordinary illnesses of childhood, and has had measles twice, the second attack being when he was 20 years of age. When 27 years of age he had an attack of gonorrhœa, and a year later, at which time he was serving as a soldier in India, he had an attack of jungle fever. For the last fifteen years he has been working as a labourer in Leith. He describes himself as having been a moderate drinker, and he states that his surroundings at home and at work have been fairly comfortable.

His present illness seems to have begun about twelve months ago. After what was apparently a slight attack of influenza, he remarked a gradual increase of thirst and appetite, and increasing frequency of micturition. He tells us that about every twenty minutes he had to leave his work for the double purpose of obtaining drink and making water. He noticed that he was especially thirsty after meals, and says that it was no uncommon thing for him to drink as much as a quart of water after breakfast. If he had of necessity to do without drink, his mouth had a sticky sensation and his tongue grew hot and dry. During the course of his illness he has been habitually constipated, the bowels being moved at intervals of three or four days. He has also noticed that he has been rapidly losing weight. Twelve months ago he weighed 13 stones 2 lbs., three months ago his weight was 10 stones 12 lbs., at present it is only 10 stones 1¼ lbs. Although not compelled to give up his work, he has been feeling himself grow weaker, and so has sought admission to the Infirmary.

Present Condition.—Patient is 5 feet 8 inches in height, and his weight, as stated, is 10 stones 1¼ lbs. He has the appearance of having been a well-developed man, but his muscles are now comparatively small and flabby.

Alimentary System.—Patient has lost six teeth; those remaining are nearly all more or less carious, and he states that he has noticed that his teeth have been decaying more rapidly during the past twelve months. His tongue is red and dry, and somewhat furred posteriorly. The oral secretion gives a markedly acid reaction with test paper. His appetite is voracious and his thirst insatiable. His digestive power is very good, and he volunteered the information that previous to his illness he could not have eaten or digested what he can do now. Bowels are somewhat constipated. On physical examination of the digestive organs the only noteworthy point is that the liver is slightly enlarged. Its percussion dulness in the nipple line is over 8 inches, and it can be distinctly recognised by palpation below the inferior costal margin.

Hæmopoietic System.—No enlargement of the lymphatic glands or of the spleen can be detected.

Circulatory System.—He has no subjective phenomena, except that he feels more easily tired and more easily put out of breath than formerly. Examination of the blood shows its specific gravity to be 1056 (Roy's method), with 6,100,000 red corpuscles, and 106 per cent. of hæmoglobin. The heart is of normal size, and shows no evidence of valvular disease. His pulse is 70 per minute, regular, soft, and compressible. The radial artery is somewhat tortuous, and its wall slightly thickened.

Respiratory System.—He has no subjective phenomena, and careful examination of the lungs fails to reveal anything abnormal.

Integumentary System.—His skin is harsh and dry. There are no eruptions, but over the metatarso-pharyngeal joint of each thumb there are slight scabs. He states that these are the results of a slight injury inflicted some weeks ago, and he states that he has noticed that slight injuries to his hands take a longer time to heal now than they did formerly. There is no apparent œdema, but if we press firmly with the point of the finger on the shin bone near the ankle, we find a very slight amount of pitting. This indicates that in spite of his polyuria there is a slight tendency for the transudation of serum into his tissues at the dependent parts.

Urinary System.—The patient has balanitis and some pain and irritation on micturition. This began twelve months ago with his present illness. There is increased frequency of micturition, both night and day. Urine, amount 250 ozs., pale and slightly opaque. It has an odour somewhat like that of sour milk, its reaction is acid, and specific gravity 1032. It contains sugar to the extent of about 8000 grains per day. The addition of caustic potass in the first stage of Moore's test causes a cloud, showing that the phosphates are abundant. There is no albumen, or other abnormal constituent.

Nervous System.—His cerebral and mental functions are normal, but he states that he has noticed that his eyesight has been failing for the last three years, and specially so during the last year. The cutaneous reflexes—plantar, cremasteric, and abdominal—are very well marked. The deep reflexes, knee and ankle, are not present. There is no impairment of motion or sensation. His temperature is as a rule subnormal. Such being the phenomena which our patient presents, let us now consider his case in a little more detail.

Etiology.—Diabetes mellitus is, as you know, more frequent in men than in women, and our patient is rather above the age at which the disease is most prone to show itself. In our patient there is nothing in the family history indicating diabetes, or any other debilitating condition. This, however, is not surprising. Although diabetes is markedly hereditary, he is beyond the age at which heredity plays its most important *rôle.* Thus, for example, of the last 12 cases of diabetes in my ward, only two showed heredity as regards this disease, and these were aged respectively 15 and 17 years, the average age of the others being over 40 years. Excluding heredity, therefore, we must look for something in his personal history which has so lowered his nutrition as to allow the diabetes to supervene. Here the points that call for remark are—that first as a soldier, and later as a labourer, he must have gone through a great deal of wearing-out work, and have suffered many exposures. Probably also he has taken more alcohol than he believes he has. There is no doubt that in a very large proportion of our Infirmary cases of diabetes an alcoholic history is obtainable, and we know that alcohol, like morphia or chloroform, is very apt to produce glycosuria. We know that drinking bouts are often accompanied by temporary glycosuria, and if drinking bouts become common, we can easily understand that the glycosuria may become permanent. Further, you will remember that in another case of diabetes which we had in our wards lately, the symptoms of diabetes were distinctly noticed to have followed the last of a series of drinking bouts.

Hard work, exposure, and alcohol have all therefore had their share in inducing his disease. But I think we are right in saying that the attack of influenza which he suffered from about a year ago has been, as it were, the "last straw," and that it has precipitated the onset of the diabetes.

Symptoms.—A good general idea of the symptoms of diabetes mellitus can be obtained from the analogy of the process of osmosis. Thus the blood, owing to the large amount of glucose in it, will be continuously drawing in to itself fluid from the alimentary canal and from the tissues, and in this way may be explained the thirst, the dryness of the mouth and of the tissues generally, and the usually present constipation. Then the glucose, with the fluid which it draws to itself in the blood, can filter readily, and hence may be explained the polyuria and glycosuria. Further, as fast as the glucose is being eliminated by the kidneys, more of it is being sent into the blood, and as fast as fluid is being absorbed from the alimentary canal and tissues, more of it is being ingested by drinking, and so the process goes on. All the symptoms of diabetes cannot be explained in this mechanical way, but many of them can. This we shall understand best by considering them in detail as they occur in connexion with the various systems.

Digestive System.—The dryness of the mouth and thirst need no further reference; but we find in our patient, as we invariably find in diabetes, that the secretions of the mouth are markedly acid. It has been said that in diabetes the saliva is acid, but this is not so. In this patient, as in all our other cases, we have found that if we produce a copious flow of saliva by stimulating the tip of the tongue with the faradic current, the reaction of the pure fluid is alkaline. The acid reaction of the secretion in the mouth, therefore, is not due to acid saliva, but probably to some acid decomposition. To this acidity is ascribed the rapid caries of the teeth noticed in this disease. In diabetes the appetite is voracious, a symptom which we can readily understand when we remember the enormous loss of oxidizable material which the glycosuria entails. Associated with this, the digestive power is specially good. Our patient tells us that he can now eat and digest quantities of food in a way which he could not have done previous to the onset of his illness. Further, we have had patients who, previous to their diabetes, suffered from dyspepsia even though they attended carefully to their diet, and who, after the disease had supervened, could eat and digest, as they expressed it, anything. In this we can recognise one of the many examples of the "vis medicatrix naturæ"; the great loss of sugar rendering the ingestion of more food necessary, Nature improves the appetite and digestive power accordingly. The slight enlargement of the liver which this patient presents is common in diabetes, and is probably due simply to hyperæmia.

Hæmopoietic System.—This is apparently normal; we find no enlargement of lymphatic glands or of the spleen.

Circulatory System.—In most cases of diabetes, as in our patient, examination of the heart and bloodvessels shows them to be fairly healthy. The pulse may be slightly quickened and slightly more compressible than in health, explicable on the theory that the heart as well as the other tissues of the body suffers from a lowered nutritive power. But in connexion with the circulatory system in diabetes, the condition of the blood is specially important. In our patient the number of red corpuscles is 6,100,000, and the hæmoglobin is 106 per cent. Now, this extra richness in corpuscles and hæmoglobin which is frequent in this disease is explained by many as being due to a concentration or a thickening of the blood, the result of the polyuria. But were this the case, the specific gravity of the blood would be correspondingly increased, and, further, we should find that the specific gravity, the number of corpuscles, and the percentage of hæmoglobin, should vary greatly with the amount of food and specially of water ingested. On this subject we have been making some observations during the session. I need not give you the results in detail, but I shall tell you what we have found in this patient (L.), and in the other diabetic (A.) whom we have at present in the ward. This will be sufficient for my purpose.

In these men we have examined the blood on several occasions between 5 and 6 A.M., and again between 10 and 11 A.M. At the earlier period they had had no food nor water for several hours; at the latter they had had breakfast and had drunk copiously of water. The following gives an idea of the results:—

Between 5 and 6 A.M.

L. Corpuscles 6,232,000. Hæmoglobin 110 per cent. Sp. gr. 1058.
A. „ 6,316,000. „ 100 „ „ 1053.

Between 10 and 11 A.M.

L. Corpuscles 6,100,000. Hæmoglobin 106 per cent. Sp. gr. 1055.
A. „ 5,056,000. „ 100 „ „ 1050.

These results show that after ingestion of food and a large quantity of water, a slight diminution alike in the specific gravity, corpuscles, and hæmoglobin is remarked, but the fact which stands out prominently is that without any marked alteration from the normal specific gravity of the blood the proportion of corpuscles and of hæmoglobin remains specially high. I am therefore in the habit of ascribing this characteristic of the blood in diabetes again to the "vis medicatrix naturæ." The amount of oxidizable material being lessened by the enormous loss of sugar in the urine, Nature tends to compensate for this by increasing the oxidizing elements in the blood, viz., the corpuscles and hæmoglobin. Something analogous seems to occur in other conditions, notably in starvation. If an animal be completely deprived of food, the nutrition of the more important tissues of the nervous system and the heart is obtained by the using up of the less important, *e.g.*, the fat, muscles, glands, etc.; and with a rapid diminution of the body-weight as a whole, the blood seems to show little diminution either as regards corpuscles or hæmoglobin.

It must not be forgotten that in certain cases of diabetes a lessening in the richness of the blood will be found. I think, however, I am right in saying that in the earlier cases, and in cases which have still some vigour left, it will be found the rule to meet with no diminution, but even a distinct increase in this respect. Such at least has been my experience; and when I recall to your minds the pink cheeks and red lips which even the emaciated of the diabetics lately in our wards have presented, you will, I think, agree with me in regarding anæmia as anything but a common associate of this disease.

Respiratory System.—This in our patient is practically normal. As you all know, lung phthisis and inflammatory affections ending occasionally in lung gangrene are regarded as being of no infrequent occurrence in diabetes, and have been ascribed either specially to some disordered condition of the trophic nerves of the pulmonary organs, viz., the vagi, or to a general lowering of nutrition. This association is shown in the table at page 898; here all that need be said is that out of 50 fatal cases of diabetes, 16 died of phthisis and 6 of pneumonia or lung gangrene. But this is not all, for of the 24 cases out of the 50 which died of coma, in at least 8 was there distinct evidence of the existence of chronic or acute lung disease.

Integumentary System.—Our patient does not complain of itching of the skin, nor are there any boils or carbuncles. But the skin feels harsh and dry, and in the scabs over his knuckles we see indications that skin wounds or abrasions are taking a longer time to heal now than they did formerly. This we shall refer to more fully when we consider the trophic conditions of the tissues in diabetes.

Urinary System.—The balanitis present in this case is due to the sugar in the urine irritating the mucous membrane over which it flows, and is a common feature in diabetes. The increased frequency of micturition, whilst probably also in part due to this irritation, is mainly, of course, the result of the large quantity of water secreted, some 250 ozs. This, supposing that the ordinary capacity of his bladder is 12 or 14 ozs., means that it must be emptied some eighteen or twenty times in the twenty-four hours. Usually in diabetes, as in health, the amount of urine passed per hour is distinctly greater during the day hours than during the night hours, this being accounted for by the food and water ingested during the day period. With this we usually find that the specific gravity of the urine and the amount of glucose and urea excreted is greater during the day hours. But it is not to be forgotten that the proportion per hour of day urine and night urine is markedly altered from that of health. In a certain number of our cases of diabetes the proportion of urine passed per hour during the night has been as great as that passed during the day, in some indeed distinctly greater, resembling in this respect what we so often find in the polyuria of contracting kidney. Further, in such instances the differences between night and day urine as regards specific gravity and amount of sugar and urea we have again and again found to be not very great, all of which observations seem to indicate that in the production of the polyuria and glycosuria of diabetes mellitus other factors than those of simple osmosis must be at work.

In our patient the following represents the state of the urine before and after the administration of diabetic diet:—

1. Average for six days on ordinary diet.

Quantity.	Specific Gravity.	Sugar.	Urea.
256 ozs.	1040.	8154 grs.	1101 grs.
highest, 292 ozs.	highest, 1044.	highest, 13,206 grs.	highest, 1916 grs.
lowest, 204 ozs.	lowest, 1032.	lowest, 5313 grs.	lowest, 549 grs.

2. Average for six days on diabetic diet.

Quantity.	Specific Gravity.	Sugar.	Urea.
96 ozs.	1038.	1886 grs.	1170 grs.
highest, 120 ozs.	highest, 1043.	highest, 2316 grs.	highest, 1400 grs.
lowest, 72 ozs.	lowest, 1032.	lowest, 1680 grs.	lowest, 756 grs.

Here it will be noticed that the main difference in the urine before and after the diet is in its quantity and in the amount of sugar. Less glucose passing into the blood from the food means less to be excreted by the urine, and means also lessened osmosis, so that there will be less thirst and less urine passed. But the large amount of nitrogenous food explains why the amount of urea should not be diminished after the administration of diabetic diet, and this and the lessened amount of water in the urine accounts for the persistence of the high specific gravity. We have found also, as stated previously, that in our patient the phosphates seem increased, and this both before and after the diet was employed. We have tested for acetone with Lugol's test—a few drops of nitroprusside of sodium and caustic soda—but the red colour did not give place to the purple on the addition of acetic acid.

Reproductive System.—The lessening of the sexual desire which is common in diabetes does not seem to have occurred in this patient, and in this connexion it is interesting to note also that his cremaster reflex is specially well marked.

Nervous System.—Our patient is by no means dull or apathetic. His superficial reflexes—plantar, cremasteric, abdominal, and epigastric—are all well marked; but his deep reflexes—*i.e.*, the knee and ankle jerks—are absent. This presence of, or perhaps increase in, the superficial reflexes, and lessening of the deep, we have found to be very common in our diabetic cases. There is no evidence of peripheral neuritis. On looking up my notes, I find that of the 15 cases of diabetes which we have had in our wards lately, only one had peripheral neuritis. This affected only the left leg, and you will remember that we explained this limitation as being probably the result of an old injury sustained by that limb.

Our patient's sight is fairly good, his accommodation is very good for his age, and there is no evidence whatever of cataract. Here you may ask, What are the causes of the diabetic cataract and of the neuritis? Both of these have been ascribed directly to the sugar in the blood,—the cataract to its causing drying of the lens by osmosis, the neuritis to its giving rise to the development in the blood or tissues of toxic substances, acet-acetic acid or crotonic acid, or whatever they may be, and thus producing neuritis, just as alcohol or lead or other toxic substances can produce it. Probably, however, the causation of these is not so simple, and this leads us to the consideration of the trophic condition in diabetes.

Trophic Condition.—That there is great disturbance here is evidenced by the rapid loss of weight. This is associated with the drain upon the body from the glycosuria and increased excretion of urea. The impairment in this trophic power is also indicated in our patient by the fact that wounds or abrasions of the skin of the hands have been noticed to take a much longer time to heal than they did formerly. In this connexion we had two cases in our wards lately, which showed this impaired nutritive condition to a much greater extent than this patient does. One of these was a patient, M., who was sent to us from the surgical house. He had gone there to be treated for deep-seated inflammation and suppuration in the palm of his left hand, which he believed had been due to a poisoned wound. The effects of treatment in the surgical house being most unsatisfactory, his urine was tested, and found to contain sugar. When he came down to us in Ward 30 we had little difficulty in making out that the diabetes had been existent for months, although unknown to himself, and that the inflammatory changes and absence of healing power in his hand were to be ascribed to this disease rather than to anything of the nature of a poisonous substance having been allowed to enter his tissues. The second case occurred in my ward two years ago, and illustrates even better than this how diabetes mellitus may reveal its presence by trophic disturbance. A man, R., aged 30, had been knocked over in the street by a van, and one of the wheels either ran over or bruised his right thigh. He was brought at once from the street where the accident had occurred into the Infirmary to the surgical wards. There it was found that no fracture had occurred, and the injury appeared to be simply a bruise, which it was expected would be recovered from in a comparatively short time. After a few days, however, it was noticed that inflammatory and suppurative changes were occurring at the seat of the injury. Incisions were made into these, but the evacuations of pus brought about no improvement. In the course of a few days inflammatory and suppurative changes were noticed to be extending up and down the thigh, the pus burrowing between the muscles and in the subcutaneous tissue, so that the skin over the greater part of the anterior and inner aspect of the thigh sloughed. The urine was then examined, and found to contain sugar, and he was sent down to our ward, where after about two weeks he died. On careful inquiry we found that this man had noticed increased urination and increased thirst for some six months before his accident, and taking everything into consideration, we came to the conclusion that in causing this patient's death the diabetes was the more important factor. Lastly, in connexion with the trophic condition, we have to remember the liability of diabetics to such diseases as phthisis, pneumonia, lung gangrene, and erysipelas.

Pathology of Diabetes.—In a clinical lecture, a detailed consideration of the pathology would be inappropriate, but I think that some good general ideas on this subject can be brought to your minds by regarding the pathological condition as being to a large extent the result of one or other or all of these three main factors:—

1. That the starchy and saccharine constituents of the food, transformed by the digestive process into grape sugar, are carried by the portal system to the liver. There, instead of being transformed into glycogen and stored up, this grape sugar is allowed to pass unchanged by the hepatic vein and inferior cava to the heart and arteries.

2. That the starchy and saccharine constituents of the food, transformed by the digestive act into grape sugar, are carried by the portal system to the liver. There this grape sugar is transformed into glycogen, but this glycogen is retransformed into grape sugar in more than normal rapidity and degree, and sent as such by the hepatic vein and vena cava to the heart and arteries.

3. That the starchy and saccharine constituents of the food, transformed by the digestive process into grape sugar, are carried by the portal system to the liver and transformed into glycogen. This glycogen is retransformed into grape sugar in normal degree, and

sent in normal amounts by the hepatic vein and vena cava to the heart and arteries. But the tissues, owing to a general defect in their nutritive powers, are unable to assimilate this grape sugar, and so it accumulates in the blood and produces the symptoms of diabetes.

Now it must not for a moment be supposed that this comprises all the pathological factors of the disease. Glycosuria can occur on a flesh diet, and can be induced artificially in animals when completely deprived of food, thus showing that grape sugar can be formed from flesh food and from proteid tissue metabolism. But if you ask me to which of the three factors I ascribe the most importance, I unhesitatingly say, to the third. It seems to me that diabetes is a disease not so much the result of disordered function of one organ, the liver, as of some disordered trophic condition, affecting the tissues generally. I am aware that destruction of one organ, the pancreas, can produce glycosuria; I am aware that in this case the onset of the disease can be explained on the theory that the resulting cessation of the internal secretion of the pancreas renders the tissues unable to assimilate the sugar brought to them by the blood; and I am aware that a like cessation of some internal secretion of the liver may have a similar effect. But I think that a study of the etiology of the disease, its marked heredity, and its tendency to occur when, as the result of some innate or acquired conditions, there is impairment of the nutritive power as a whole, all point to some more general pathological cause.

Prognosis.—In our patient the immediate prognosis is fairly favourable, but the ultimate prognosis is bad. His age and good general condition are in his favour, but the loss of sugar and urea is great, and the effects of diet are not proving of any great avail, so that we cannot but prognosticate unfavourably for him in no long time, probably within the next two years. How is his case likely to terminate? To form an idea on this point I give you a summary of the causes of death in 50 cases of diabetes as detailed in the pathological records of the Edinburgh Royal Infirmary, and from these you will, I think, be able to draw your own conclusions.

Number of Cases.	Cause of Death.	Males.	Females.	Average Age of Males.	Average Age of Females.
24	Coma.	17	7	31	25
16	Phthisis.	12	4	31	24
6	Pneumonia or gangrene of lung.	All	...	36	...
4	Erysipelas or gangrene of external parts, the result of accident or operation.	3	1	...	...

This shows that coma is the commonest cause of death, and that next follows phthisis, the ages being in each case much the same. Pneumonia and gangrene of the lung are less frequent causes, and tend to occur at a rather later age. Other causes of death are what might be called accidental.

I cannot refrain at this stage from mentioning that in the pathological reports of the Infirmary for the year 1851 I find that in two cases of diabetes which had died of coma, atrophy of the pancreas is noted to have been found by the then pathologist, Dr W. T. Gairdner. This is, of course, interesting in connexion with the more recent investigations as regards pancreatic diabetes.

Treatment.—Our patient has been put upon diabetic diet, and we are doing what we can to keep his skin function in good order. Warm flannel clothing is of course essential for this, but hot baths, or even for patients who can stand it, Russian or Turkish baths at intervals, may be employed. As regards drugs, with the exception of opium or codeia, we do not know of any which have a marked effect on the glycosuria, but we know that with such treatment as cod-liver oil, and with arsenic in increasing doses, we often get general improvement, and these drugs we are now giving to our patient. We have seen cases which did remarkably well on milk alone, and I had a patient lately who seemed to be improved by euonymin, which I gave him on the theory that whatever affected beneficially the biliary function of the liver might have a like effect on the glycogenic. Then we must remember that whatever improves the mental and general condition has a beneficial effect on the disease, and so we must endeavour to arrange that diabetic patients be shielded from all business cares and worry, and that they should have all the good which change of air and scene alone can give.

If in time the patient declares that he can no longer eat and digest the gluten bread and almond cakes, or if the craving for wheaten bread and potatoes can be no longer resisted, the best form in which to give these is toasted. In such circumstances we not infrequently find that the allowance of a little toasted bread or chip potatoes may appear to be rather beneficial. In time, too, opium or some of its derivatives may be required, but these should only be used with caution. For the coma, when it occurs, little can be done. On the theory that it is due to the liberation of some acid, the injection into a vein, or subcutaneously, of a 3 per cent. solution of sodium bicarbonate has been advised. So also has the inhalation of oxygen, but neither of these has been found to be of much use.

II.—ON SEPARATE ACROMION PROCESS SIMULATING FRACTURE.

By JOHN STRUTHERS, M.D., LL.D, *P.*R.C.S. Ed.

(*Continued from page* 297.)

III. ACCOUNT OF DISSECTIONS AND SPECIMENS SHOWING SEPARATE ACROMION OSSICLE IN THE ADULT.

Points to be attended to in the study of such specimens.—Careful study of the parts is essential in such an inquiry. Attention has to be given to the following:—Whether there is evidence of disease at the acromion or of the shoulder joint, or evidence of former injury. Sex, age, and robustness of the scapula. General form of the acromion and its size. In regard to the separate *ossicle,*—its length in proportion to the basi-acromion. In regard to the *intra-acromial joint,*—its direction, in relation to the longitudinal axis of the acromion; direction particularly at the outer side, whether obliquely backwards; ligaments and edges or crests at the joint, and amount of movement allowed; nature of the surfaces of the joint, whether a synovial cavity present. In regard to the *acromio-clavicular joint,*—whether the clavicle rests in part on the basi-acromion; whether the ligaments and surfaces are normal.

The following Table may be referred to for comparison of the specimens.

Table II.—*Showing the size of the separate acromial ossicle in relation to that of the entire acromion, and other particulars of each of the scapulæ; the measurements of the scapulæ given in inches, those of the ossicle in $\frac{1}{12}$ths of an inch.*

No.	Fig.	Side.	Age.	Sex.	Scapula.		Entire Acromion.		Separate Ossicle.	
					Length.	Breadth.	Length.	Breadth.	Length.	Breadth at Base.
1	.	R.	80	?	$5\frac{1}{2}$	4	$1\frac{9}{12}$	1	$\frac{10}{12}$	$\frac{10}{12}$
2	.	L.	80	F.	$5\frac{5}{8}$	$3\frac{7}{8}$	$1\frac{10}{12}$	?	$\frac{10}{12}$	$1\frac{1}{12}$
3	6a	R.	82	F.	$5\frac{7}{8}$	$3\frac{7}{8}$	$1\frac{9}{12}$	$\frac{11}{12}$	$\frac{9}{12}$	$\frac{9}{12}$
,,	6	L.	,,	,,	same	same	same	$\frac{10}{12}$	1	$\frac{9}{12}$
4	.	L.	80	F.	$5\frac{1}{2}$	$3\frac{7}{8}$	$1\frac{6}{12}$	$\frac{11}{12}$	$\frac{10}{12}$	$\frac{10}{12}$
5	.	R.	64	M.	$6\frac{1}{2}$	$4\frac{1}{8}$	2	1	$\frac{11}{12}$	1
,,	.	L.	,,	,,	$6\frac{5}{8}$	same	$1\frac{10}{12}$	same	.	.
6	7	L.	.	?	6	$3\frac{6}{8}$	$1\frac{10}{12}$	1	$\frac{10}{12}$	$\frac{11}{12}$
7	8	L.	.	M. ?	$6\frac{6}{8}$	4	2	$1\frac{2}{12}$	$1\frac{3}{12}$	1
8	.	L.	.	?	$5\frac{6}{8}$	4	$1\frac{6}{12}$	1	$\frac{9}{12}$	1
9	.	L.	.	?	.	$3\frac{1}{2}$	$1\frac{8}{12}$	1	1	1
10	.	L.	.	?	$6\frac{1}{8}$	$3\frac{2}{8}$	$1\frac{8}{12}$	1	$\frac{8}{12}$	$\frac{10}{12}$
11	9	R.	.	M. ?	.	.	$2\frac{9}{12}$	$1\frac{3}{12}$	1 $\frac{6}{12}$	$1\frac{1}{12}$ $\frac{6}{12}$
12	.	L.	.	M. ?	$5\frac{1}{4}$	4	$1\frac{6}{12}$	$\frac{9}{12}$	1	1
13	.	R.	.	M. ?	$6\frac{1}{2}$	4	2	$1\frac{1}{12}$	$1\frac{2}{12}$	1

Explanation of the measurements, etc., in the Table.—*Scapula*, length taken between upper and lower angles; breadth taken along base of spine, vertebral border to posterior border of glenoid cavity. *Acromion*, including the ossicle, length taken along middle ; breadth taken at middle of basi-acromion, generally the greatest breadth. *Ossicle*, length taken from middle of tip to middle of its joint with basi-acromion; breadth taken along base at joint, whether transverse or oblique. All the measurements are taken with callipers. As the acromion, as a whole, is bent longitudinally, convexity upwards, there falls to be added for the length of the basi-acromion about $\frac{1}{12}$ inch more than that remaining after deducting the length of the ossicle.

The first five cases are dissections, so that the age and sex could be given. In Nos. 3 and 5 both sides are given. The other side of No. 2 was noted as normal. In No. 11 there are two ossicles, anterior and posterior, with slight marks of disease. In No. 2 the acromion was thinned by absorption. In No. 1 there had been sub-coracoid dislocation and rheumatoid disease of the shoulder joint. The remaining eight are macerated specimens. Those that are probably male are marked M. ?; those of which the sex is quite uncertain have ? in the sex column.

(A.) DISSECTIONS.

Case No. 1. Also old-standing sub-coracoid dislocation of humerus, with chronic rheumatoid arthritis of shoulder joint and great alteration of the anatomical neck of the humerus. From a subject æt. 80, sex not noted. Right scapula, left not noted.

Scapula rather undersized (length $5\frac{1}{2}$ inches, breadth 4) but muscular markings pretty well developed. *Acromion*, of the broadly crescentic type ; much bent, very convex at middle third at and behind intra-acromial joint ; but a posterior angle present where spine meets acromion considerably internal to usual position of posterior angle. *Ossicle*, triangular, end blunt, like end of little finger, and does not project beyond clavicle. Length $\frac{10}{12}$ inch, breadth at base $\frac{10}{12}$. Entire acromion, length $1\frac{9}{12}$, breadth at middle of basi-acromion 1 inch. The ossicle shows one faint projection on outer margin and projects considerably at base. Basi-acromion shows two tubercles besides the posterior angle, one of them at the joint.

Intra-acromial joint, direction nearly transverse, undulating, has small median projection and goes backwards at both sides, most at the outer side, giving moderate backward direction to joint externally. Good superior and inferior ligaments, superior the strongest ; moderate ridges above and below attach the ligaments. Movement distinct. When joint opened, synovial cavity seen throughout ; surfaces ($\frac{10}{12} \times \frac{5}{12}$ inch) undulating, smooth but finely dimpled, not like ordinary articular cartilage except on most of inner half ; covering of cartilage thin. The ossicle is thicker ($\frac{5}{12}$) than the basi-acromion ($\frac{4}{12}$) and rough below, but not diseased.

Acromio-clavicular joint.—Inferior ligament considerably strengthened ; no inter-articular fibro-cartilage and but few synovial fringes. Cartilage on clavicle thick and mostly spongy, giving irregular surface. Acromial facet, smooth cartilage ; height $\frac{4}{12}$ with the usual inclination ; length $\frac{8}{12}$, of that $\frac{2}{12}$ on basi-acromion. When clavicle pushed outwards, ossicle is moved freely ; when clavicle pushed outwards and backwards, the movement is arrested by the basi-acromion. Synovial cavity appears to be continuous with that of intra-acromial joint, but I am not certain of that. Coraco-clavicular band strong, attached entirely to the ossicle.[1]

Case 2.—With great thinning of acromion; shoulder joint healthy. The appearances suggest former disease of the sub-acromial bursa. From a female subject æt. 80. Left scapula, right scapula noted as normal.

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[1] The condition of the shoulder joint in this case is noted in the Appendix.

Scapula, rather undersized (length $5\frac{5}{8}$, breadth $3\frac{7}{8}$), very thin, very translucent at both fossæ*;* ridges on subscapular fossa well marked. Surfaces of shoulder joint, capsular ligament, and tendon of biceps healthy. *Acromion*, may have been of quadrate type, but now has on outer border three irregular excavations with serrated edges, giving two triangular peaks between. The anterior excavation ($\frac{6}{12}$ wide, $\frac{1}{12}$ deep) is entirely on the ossicle ; the middle excavation (1 inch wide, $\frac{3}{12}$ deep) has its apex at the intra-acromial joint and is more on the ossicle than on the basi-acromion ; the posterior excavation ($\frac{9}{12}$ wide, $\frac{2}{12}$ deep) is on the back part of the outer border of the basi-acromion, the peak bounding it in front is opposite the middle line of the spine of the scupula. The acromion as a whole is thin on its outer half, translucent at parts, shelving outwards to a sharp edge like an oyster shell ; under surface marked by shallow depressions; upper surface irregularly grooved transversely, especially on outer half opposite the excavations (thickness at the grooves $\frac{1}{12}$, at the ridges $\frac{3}{12}$ to $\frac{2}{12}$). No ostitic roughness on either surface. The peaks to which the ridges run outwards appear to represent, so far, the points to which the inter-muscular septa of the deltoid are attached. Length of entire acromion $1\frac{10}{12}$, breadth at most projecting peak $1\frac{3}{12}$. *Ossicle*, length $\frac{10}{12}$, breadth at base $1\frac{1}{12}$; the breadth in this case, if not increased by disease, thus exceeding the length.

Intra-acromial joint,—on outer two-thirds, only a loose membranous ligament, $\frac{2}{12}$ in length when stretched, connecting the thin edges of the bones ; on inner third, the bones are in contact ($\frac{4}{12} \times \frac{1}{12}$) with ligament above, below and internally, are lined by thin cartilage with appearance of a synovial cavity. The ossicle is very loose in all directions, and moves outwards and inwards for $\frac{2}{12}$ inch when pushed or drawn by the clavicle.

Acromio-clavicular joint,—connexion only by a slack ligament ($\frac{1}{3}$ to $\frac{1}{2}$ inch in length, $\frac{3}{4}$ in breadth, $\frac{1}{12}$ in thickness) between the ends of the bones. Where ligament attached, ossicle $\frac{1}{4}$ inch in thickness at middle, thin before and behind, concave both ways ; end of clavicle $\frac{3}{4}$ inch in breadth, $\frac{1}{4}$ in thickness at middle, excavated both ways ; no adaptation between the bones possible. The ligament has no attachment to the basi-acromion. Outward dragging of the ossicle by the action of the deltoid would be checked by the acromio-clavicular and coraco-clavicular ligaments, forward dragging by the intra-acromial ligament.

Case 3. On both sides. From a female subject æt. 82. No disease on either side. Figured in the Plate, left fig. 6, right fig. 6a.

Scapulæ slender, thin and very translucent on both fossæ, ridges on subscapular fossa pretty well marked. Both scapulæ, length $5\frac{7}{8}$, breadth $3\frac{7}{8}$. *Acromion*, form on the two sides, and that of the ossicle, seen in figs. 6 and 6a. The form is between the ovoid and crescentic types, the outer border much bent at and near the intra-acromial joint, the posterior angle somewhat rounded, the anterior end blunt-pointed. *Ossicles*, triangular with blunted apex ; left longer than right, forming more than half of entire acromion, the right less than half. Length of both acromions $1\frac{9}{12}$; breadths at middle of basi-acromion, right $\frac{11}{12}$, left $\frac{10}{12}$. Breadth of both ossicles at base $\frac{9}{12}$; lengths, right $\frac{9}{12}$, left 1 inch. The left ossicle, the longer one, shows two deltoid tubercles, the basi-acromion one tubercle close to the joint ; the right ossicle one elevation, the basi-acromion two. There are besides the tubercles represented by the anterior and posterior angles.

Intra-acromial joint, good ligament above and below, the former rather the stronger, attached to raised edges above and below on both bones. These ligaments unite round the borders, on inner border forming a septum between the intra-acromial and the acromio-clavicular synovial cavities. Movement, though limited by these ligaments, is enough to be recognisable in the living body. Synovial cavity present on both sides throughout ; surfaces not smooth and polished like ordinary articular cartilage, but finely mottled ; the covering of cartilage thin. Depth of the surfaces at the middle $\frac{5}{12}$, being greater than the thickness of the ossicle and basi-acromion ($\frac{3}{12}$), owing to the raised edges at the joint. In direction, the joints differ on the right and left sides. The way generally in the series of specimens is, that the basi-acromion forms a projection and falls away backwards on either side, giving a general concavity backwards, with, it may be, minor undulations. That is seen here on the right side (fig. 6a), the projection being external to the middle ; but on the left side (fig. 6) that on which the ossicle is the longest, it is the reverse, the projection being on the ossicle, and the outer slope of the joint has a forward instead of the usual backward direction.

Acromio-clavicular joint.—It is worthy of note that the inferior ligament, normally very slender, is stronger than usual. In both scapulæ the clavicle rests entirely on the ossicle, as shown in the figures, the connexion of the clavicle to the basi-acromion being only by the posterior part of the acromio-clavicular ligaments. Length of acromio-clavicular surfaces, $\frac{1}{2}$ inch, height $\frac{1}{3}$ inch ; length being thus the same on both sides although the left ossicle is longer than the right. In both the joint begins at the posterior part of the ossicle. Acromial facet concave both ways, clavicular facet convex both ways ; joint has the usual slope downwards and inwards. The acromial facet is lined by smooth articular cartilage. In the upper half of the joint on the right side there is a *true incomplete inter-articular fibro-cartilage*, elliptical and wedge-like (height $\frac{2}{12}$, length $\frac{1}{3}$ inch) attached above to the superior ligament, below with natural sharp edge. Its cartilage-like appearance marks it off distinctly from the fibrous tissue of the ligament from which it hangs into the joint. In the left joint it is much less apparent, about half the height of the one in the right joint, and with fringed free edge, hardly an advance on the synovial tufts that usually hang into the joint from above and are liable to be mistaken for a partial inter-articular fibro-cartilage.

Sockets of shoulder joint healthy, except some thickening of long tendon of biceps at its origin in left shoulder.

Case 4. From a female subject æt. 80. Left scapula ; no disease. Right not noted.

Scapula,—$5\frac{1}{2} \times 3\frac{7}{8}$ inches ; very thin and translucent at fossæ ; subscapular ridges very faint, but other muscular markings well developed. *Acromion*, crescentic type, posterior angle rounded off, outer border much bent at and behind intra-acromial joint ; point does not project beyond line of clavicle. Length of entire acromion $1\frac{6}{12}$, breadth of basi-acromion at middle $\frac{11}{12}$. *Ossicle*, length $\frac{10}{12}$, breadth at base $\frac{10}{12}$. Outer border shows no deltoid tubercle, but projects considerably at the base ; basi-acromion shows two tubercles, besides the posterior angle, one of them at the joint.

Intra-acromial joint, ligament above and below, attached to raised edges, joining at outer and inner sides, the inferior ligament quite as strong as the superior. Movement quite sufficient to be recognisable in living body. Synovial cavity throughout, and not continuous with acromio-clavicular joint ; surfaces ($\frac{10}{12} \times \frac{5}{12}$) same appearance as noted above in other specimens, the covering of cartilage thin and with smooth but finely mottled surface. Direction of joint, at right angles to axis of acromion, undulating but nearly transverse generally, outer fourth inclined moderately backwards.

Acromio-clavicular joint.—Clavicle rests entirely on ossicle ; connected to basi-acromion only by posterior part of ligaments. Inferior ligament, as in case 3, much stronger than normal. Facets, length $\frac{6}{12}$, height $\frac{3}{12}$, the acromial one concave both ways, the clavicular one convex both ways ; have the usual slope downwards and inwards. Surface of acromial facet smooth and polished articular cartilage, that of clavicular facet smooth but tending to spongy condition. *A complete inter-articular fibro-cartilage* present, with completed synovial cavity on each side of it. It is attached all round, below to the clavicle rather than to the ligament; is about $\frac{1}{24}$ inch in thickness, semi-translucent, but firm enough to maintain the curvatures that had adapted it to the facets. This is the only instance of the occurrence of a complete inter-articular fibro-cartilage at this joint I have ever seen.

The socket of the shoulder joint is healthy; also the tendon of the biceps.

Case 5. From a male subject æt. 64. Right scapula; no disease. Some appearance of corresponding groove on left acromion.

Length of right *scapula* $6\frac{1}{2}$ inches, of left $6\frac{5}{8}$; breadth of both $4\frac{1}{8}$; both have strong muscular markings. *Right acromion*, form rather of the oval type, posterior angle rounded, anterior end a blunt point projecting a little ($\frac{1}{8}$ inch) beyond clavicle, outer border considerably convex at and near intra-acromial joint. Length 2 inches, breadth of basi-acromion 1 inch. *Ossicle*, length $\frac{10}{12}$, breadth at base 1 inch. Outer border of ossicle shows a low elevation and projects considerably at the base; basi-acromion shows two deltoid tubercles, one near the front and one in front of the rounded angle.

Intra-acromial joint.—Ligament above and below attached to raised lips; the lips above considerably raised, suggesting slight ostitic action here. Amount of movement allowed should be quite recognisable in living body, especially depression. Synovial cavity throughout; surfaces, as noted in previous cases, smooth and mottled and layer of covering cartilage thin. Surfaces, 1 inch by $\frac{1}{2}$ inch; upper crest and greater convexity above give unusual height to the surfaces. Thickness of basi-acromion and of ossicle $\frac{4}{12}$, thickness (height) at the raised lips $\frac{7}{12}$. Direction of the joint, nearly transverse, with slight general concavity of basi-acromion; no backward direction of joint at outer side.

Acromio-clavicular joint.—Clavicle rests entirely on ossicle, posterior part of ligaments alone connecting clavicle to basi-acromion. Inferior ligament stronger than usual. Facets, length $\frac{7}{12}$, height $\frac{4}{12}$; acromial concave both ways, clavicular convex both ways; joint has usual slope downwards and inwards; cartilage of both smooth, that of clavicle thicker, showing tendency to spongy condition. Synovial tufts hang into joint from above, simulating a partial fibro-cartilage, but are only ragged tufts.

Left acromion.—On upper surface a shallow groove crosses the acromion in nearly same position as the intra-acromial joint of right acromion, almost exactly in same position except that it bends back at the outer and inner sides. Is best marked on inner half, its sharp posterior boundary prolonged from upper edge of spine of scapula. As the groove is not deep and as there is no groove or mark on the under surface, I hesitate to consider it a vestige of the union of a formerly separate ossicle, but it may be so. Acromio-clavicular joint of left side, same as noted on right side. Form of acromion, like the right, but wants the considerable convexity of outer border seen on the right acromion at and near the intra-acromial joint. Of same breadth as the right, it is $\frac{2}{12}$ shorter, which might accord with the disappearance of a former intra-acromial joint. Of three tubercles seen on outer border of acromion between anterior end and posterior angle, two are in front of the groove, one of these close to it; the third is behind the groove on what would have been the basi-acromion.

(B.) MACERATED SPECIMENS.

The following are macerated specimens in my collection, with the exception of Nos. 12 and 13, which are in the Charles Bell collection in the Museum of the College of Surgeons. They are all adult. The sex can be only inferred from the size and muscularity, and consequently appears in the Table (Table II.) as either entirely uncertain or as probable. Of these eight specimens six are of the left side; there is no record of the condition of the other side.

Case 6. Fig. 7. Left scapula; no appearance of disease.

Scapula, length 6 inches, breadth $3\frac{6}{8}$, muscularity moderate. *Acromion* mostly of the ovoid type, posterior angle rounded, length of entire acromion $1\frac{10}{12}$, breadth at middle of basi-acromion 1 inch. *Ossicle*, length $\frac{10}{12}$, breadth at base $\frac{11}{12}$. Two of the tendon tubercles seen on the ossicle, the second of these at its base; basi-acromion scarcely shows a tubercle. *Intra-acromial joint*, line wavy, general direction nearly transverse to axis of acromion, but outer third directed obliquely backwards. *Acromio-clavicular joint*, facet for clavicle, length $\frac{9}{12}$, of which about a fourth part is on basi-acromion. The figure (fig. 7) is given as an example of the partial resting of the clavicle on the basi-acromion, although that is not owing to shortness of the ossicle.

Case 7. Fig. 8. Left scapula; no appearance of disease. From size and muscularity inferred to be probably male.

Scapula, length $6\frac{6}{8}$ inches, breadth 4; muscular. *Acromion*, of the triangular type, antero-external angle wanting, antero-internal angle very pointed and prolonged a little ($\frac{1}{8}$ inch) beyond clavicle; length of entire acromion 2 inches, breadth of basi-acromion $1\frac{2}{12}$. *Ossicle*, long; length $1\frac{3}{12}$, being longer than basi-acromion by $\frac{1}{2}$ inch; breadth at base 1 inch. Tendon tubercles on outer border of ossicle rather indefinite, but appearance of two, and base projects; one tubercle, perhaps two, on basi-acromion, besides its angle. *Intra-acromial joint*, line sigmoid, on basi-acromion concave internally, convex externally, then directed a little backwards; general direction a little outwards and backwards. Lips of joint project a good deal above. *Acromio-clavicular joint*, facet entirely on ossicle, length fully $\frac{9}{12}$ inch; is about $\frac{1}{8}$ inch from base and from apex of ossicle.

Case 8. Left scapula; no appearance of disease.

Scapula, length $5\frac{6}{8}$ inches, breadth 4; apparently aged, fossæ very translucent and muscular ridges little marked. *Acromion*, like No. 7, of the triangular type, considerable convexity on outer border at the joint; length of entire acromion $1\frac{6}{12}$, breadth of basi-acromion 1 inch. *Ossicle*, length $\frac{9}{12}$, being equal to that of basi-acromion, breadth at base 1 inch. The considerable convexity on outer border at and near joint appears as if formed by a tendon tubercle on each bone; anterior tubercle on ossicle indefinite; posterior angle of basi-acromion fairly well marked. *Intra-acromial joint*, general direction outwards and a little backwards; inner two-thirds wavy, obliquely backwards at inner side; outer third obliquely backwards till at margin. *Acromio-clavicular joint*, facet entirely on ossicle; length $\frac{6}{12}$, height $\frac{3}{12}$; extends from near base of ossicle to $\frac{3}{12}$ inch from point; surface foraminated. Both basi-acromion and ossicle thin in this apparently aged specimen.

Case 9. Left scapula; no appearance of disease.

Scapula, part below spine and glenoid cavity has been sawn off; breadth $3\frac{1}{2}$ inches; muscular markings on spine moderate. *Acromion*, mostly of the ovoid type, posterior angle well defined behind but not very prominent, outer border considerably bent at the joint. Length of entire acromion $1\frac{8}{12}$, breadth of basi-acromion 1 inch. *Ossicle*, length 1 inch, being longer than basi-acromion by $\frac{1}{3}$ inch ; breadth at base 1 inch. On its very convex outer border two low tendon tubercles seen and base projects. Slight tendon tubercle seen at middle of short basi-acromion. *Intra-acromial joint*, angular, inner third directed backwards, outer two-thirds backwards till just at margin, general direction backwards and outwards. *Acromio-clavicular joint*, facet entirely on ossicle, might seem partly on basi-acromion but not so, triangular area behind it is foraminated and facet seen to be finished at back part of ossicle ; length of facet $\frac{7}{12}$, height at middle $\frac{4}{12}$; at front of facet ossicle slopes off to blunt apex ; direction of facet mostly downwards and outwards (not inwards).[1]

Case 10. Left scapula ; no appearance of disease.

Scapula, length $6\frac{1}{8}$ inches, breadth $3\frac{2}{8}$, narrow for its length ; not muscular. *Acromion*, of the crescentic type, posterior angle quite rounded off obliquely, only a very low projection to mark off acromion proper from expanding crest of spine ; outer margin uniformly convex, antero-external as well as posterior angle wanting, giving the crescentic form ; anterior end pointed but not sharp ; length of entire acromion, $1\frac{8}{12}$, breadth of basi-acromion 1 inch. *Ossicle*, length $\frac{8}{12}$, breadth at base $\frac{10}{12}$. Two low tendon tubercles on ossicle and projection at joint ; on basi-acromion one tubercle besides projection at joint. *Intra-acromial joint*, angular, outer third directed moderately backwards, inner two-thirds directed more obliquely backwards ; upper edges considerably raised. *Acromio-clavicular joint*, facet rests partly on basi-acromion, height $\frac{4}{12}$, length $\frac{7}{12}$, of which $\frac{1}{12}$ is on basi-acromion ; anterior end is $\frac{3}{12}$ from point of ossicle.

Case 11. Right scapula ; two ossicles, anterior and posterior, leaving the acromion in three pieces ; traces of chronic arthritis on under surface of the ossicles. Fig. 9.

Scapula, only outer portion with the processes and outer part of clavicle present ; evidently a strong muscular scapula. *Acromion*, of the crescentic type, posterior angle moderately rounded, outer margin uniformly convex, pointed in front, giving crescentic form. Length of entire acromion $2\frac{9}{12}$ inches, of which $1\frac{5}{12}$ formed by basi-acromion ; breadth of basi-acromion $1\frac{3}{12}$. *Two epi-acromial ossicles ; posterior*, length 1 inch, breadth at base $1\frac{1}{12}$; *anterior*, length $\frac{5}{12}$, breadth at base $\frac{6}{12}$, triangular and pointed at end. *Posterior intra-acromial joint*, general direction outwards and forwards, wavy, slopes backwards more at inner than at outer side. *Anterior intra-acromial joint*, general direction nearly transverse. Tubercles on outer border of acromion indefinite, two on basi-acromion besides posterior angle, the front one at the middle, and projection at joint ; one on posterior ossicle besides projection at base, but border serrated ; tubercles on anterior ossicle represented by point and by projection at base. *Acromio-clavicular joint*, clavicle rests entirely on posterior epi-acromial ossicle ; posterior part of ligaments attached to basi-acromion, anterior part attached to base of anterior ossicle.

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[1] *Note on ossification of the supra-scapular ligament.*—In evidence that there was no want of tendency to ossification in this scapula, may be noted that the supra-scapular ligament is represented by a strong bridge of bone, $\frac{1}{2}$ inch in breadth. In three other scapulæ in my collection having this bridge of bone (all from different subjects), one, a left, has the bridge as broad as in case 9 ; in the other two, right scapulæ, the bridge is only about $\frac{1}{8}$ inch in breadth. In one of the latter the foramen is elongated and slightly hour-glass shaped, and would take in both the nerve and the bloodvessels ; in the two with the broad ridge not more than the nerve could pass through. These bridges of bone, usually described as resulting from ossification of the ligament, are quite smooth bone.

Amount of diseased appearance.—On upper surface, edges of both intra-acromial joints raised more than usual and surface of posterior ossicle rather rough ; on under aspect, posterior ossicle has smooth polished "porcellanous" surface finely foraminated, anterior ossicle a little rough but not porcellanous. No other appearance of disease ; glenoid cavity healthy and tendon of biceps normal.

The subdivision of the epi-acromion in this case might have been attributed to disease had there been marked arthritis, but as the shoulder joint is healthy and as the appearance of disease seen on the posterior ossicle is not great, the conclusion appears to be that we have here a case in which the ossific centres for the anterior part of the acromion have remained separate as well as a case in which the major epi-acromion has remained separate from the basi-acromion.

I am indebted to the Museum Committee of the College of Surgeons for permission to notice the two following specimens, Nos. 12 and 13.

Case 12. Left scapula showing separate epi-acromion, and appearance as if of united fracture at lower angle and base of bone. No appearance of disease.

The specimen, No. 3, 102 in the printed catalogue, is marked "Ununited fracture of the acromion process and united fracture of the vertebral border." In the MS. catalogue of Sir Charles Bell the description is, "There has been a fracture of the acromion scapulæ ; a false joint must have been formed between the two portions ; at the lower angle a fracture, or perhaps a diastasis of the cartilage, has taken place, which is now united." I mention this to show the view that used to be taken of the nature of this condition of the acromion. The acromion, however, presents the usual family likeness of cases of separate epi-acromion.

Scapula, moderately muscular and of good size, length $5\frac{1}{4}$ inches, breadth 4 (somewhat diminished by the supposed fracture). The line of the seeming fracture cuts off $\frac{1}{2}$ to $\frac{3}{4}$ inch at lower angle and about $\frac{1}{2}$ inch of the breadth of the base up to nearly midway to the spine. The united part is inclined to the subscapular fossa, and the fracture thus appears to have been caused by a force from behind. No appearance of other injury to the bone and none of disease. *Acromion*, form indefinite, between the crescentic and triangular types, posterior angle much sloped off, almost continued from lower edge of crest of spine, anterior end blunt-pointed, general triangular form given mainly by form and great size of epi-acromion. Length of entire acromion $1\frac{6}{12}$, of which only the $\frac{6}{12}$ formed by basi-acromion ; breadth $\frac{9}{12}$. *Ossicle*, length 1 inch, breadth at base (the broadest part of entire acromion) 1 inch. Tubercles on outer border of acromion indefinite, one elevation on epi-acromion, a slight one on basi-acromion, and both have projecting angles where they meet at the joint.

Intra-acromial joint, general direction transverse, but with concavity backwards ; margins a little raised except on ossicle below. *Acromio-clavicular joint*, entirely on ossicle, facet on ossicle ovoid and short, length $\frac{6}{12}$, height $\frac{3}{12}$, situated $\frac{3}{12}$ from posterior end of inner border of ossicle, $\frac{4}{12}$ from anterior end ; has very little inclination downwards and inwards.

Case 13.—Right scapula in which a formerly separate ossicle is now mostly united to the basi-acromion. This specimen is exceptionally interesting as showing union taking place. No appearance of disease.

In the original Bell catalogue the specimen is marked as "A fracture of the acromion scapulæ." In the valuable recent printed catalogue, 1893, by the Conservator of the Museum, Mr Cathcart, it is marked "No. 3, 103. Supposed fracture of the acromion process of the scapula. Right scapula—macerated—showing an irregular groove between the acromion process and the rest of the bone. This is possibly a late union of the epiphysis."

Scapula large and muscular, in all probability male; length $6\frac{1}{2}$ inches, breadth 4. *Acromion*, of bluntly crescentic form, inner border very little concavity, external border uniformly convex, anterior end blunt, posterior angle very little marked. Length of entire acromion 2 inches, breadth $1\frac{1}{12}$. *Ossicle*, length $1\frac{2}{12}$, breadth at base 1 inch. Tubercles on outer edge of acromion, on the ossicle two besides point and corner at suture; on basi-acromion, one very low tubercle at middle, and corner at suture.

Intra-acromial suture, direction nearly transverse, slightly outwards and backwards; nearly straight. The suture of union is strongly marked above, as a furrow about $\frac{1}{12}$ inch wide and nearly the same in depth; its anterior boundary sharp and overhanging, the posterior boundary bevelled with slightly raised margin; floor of furrow shows a few fine foramina. On under surface only a shallow furrow seen, with corresponding direction.

Acromio-clavicular joint.—A very small part of the facet, hardly $\frac{1}{12}$ inch, is on the basi-acromion; length of facet $\frac{8}{12}$, height $\frac{4}{12}$, distance from anterior end of inner border of ossicle $\frac{3}{12}$.

The probable interpretation in this case is that the union of the epi-acromion has been delayed. If it has been a case of fracture, the fracture has taken place at the usual line of epiphysial union, and is undergoing bony union without callus.

(*To be continued.*)

III.—CURETTAGE OF THE UTERUS: HISTORY, INDICATIONS, AND TECHNIQUE.

By J. W. BALLANTYNE, M.D., F.R.C.P.E., F.R.S.E.

(*Read before the Obstetrical Society of Edinburgh, 8th January* 1896.)

(*Concluded from page* 796.)

2. *Chronic.*—It is probable that under the head of chronic infected states of the uterus ought to be placed many of the cases of so-called simple chronic endometritis. The uterus is enlarged, menstruation is disordered, there is purulent leucorrhœa, and sometimes pus is discharged in a gush; there is frequently uterine displacement, there is some pain over the uterus, but a down-bearing feeling is more common; there is often some thickening or adhesions on one or both sides of the pelvis; and the patient usually refers her sufferings back to a post-abortum or post-partum period or to the results of gonorrhœal infection, and states that she has been sterile since then. Not infrequently the cervix is enlarged, and protruding from the os are one or more mucous polypi. The symptoms I have named were all present in the case of Mrs D., which I may here take as my type.

Illustrative Case.

Mrs D., aged 34 years, was first seen by me on April 24, 1895. Seven years ago she was instrumentally delivered of a dead-born child. This was her first and only pregnancy. She suffered from abdominal pain and tenderness after the labour, and seems at that time to have had acute endometritis, followed by pelvic peritonitis. Her recovery was slow, and since that time she has had persistent severe dysmenorrhœa and has never again become pregnant. Various palliative means of treatment had been tried without success, and on account of the intensity of her sufferings the patient had needed powerful narcotics at the menstrual periods. The pain then was agonizing; it came on regularly every month, and the flow was moderate in quantity, and it was worst on the first day before the discharge was fairly established. For this day, and frequently also for the one following, she had to keep her bed, and hot abdominal applications, as well as morphia suppositories, were needed. Sometimes an enema gave temporary relief, sometimes it did not. The pain was spasmodic in character, and was quite different from the constant dull, aching pain which was present in the intermenstrual period. I saw her in one of her worst attacks, and can vouch for the intensity of her menstrual suffering. She was also much troubled with leucorrhœa, which was generally worst when the pain was easier. Once or twice a purulent discharge had occurred in a gush from the passage. But for the uterine trouble she was in the enjoyment of good health, although she had had one or two serious illnesses.

Vaginal and bimanual examination revealed an enlarged uterus lying obliquely in the pelvis, with its fundus to the right and the cervix to the left side. The sound could only be passed with great difficulty and with some pain; it entered for a distance of about 3 inches. Two mucous polypi could be felt projecting from the cervix, which pointed to the front and left side. The uterus as a whole was retroposed as well as lateroverted, and it was firmly fixed in position. There was distinct thickening in the position of the left broad ligament, and the patient complained of pain on pressure over the left iliac region. The left Fallopian tube felt large, and the utero-sacral ligaments stood out distinctly at the borders of the posterior fornix.

As all sorts of palliative means had already been tried, I made up mind to remove, in the first instance, the mucous polypi, then to dilate and strengthen the cervix, and thereafter to curette if the condition indicated it. Accordingly on May 4, 1895, being a few days after a menstrual epoch, the patient was anæsthetised, the vagina and genitals very carefully cleansed and disinfected, and the polypi twisted off. I encountered great difficulty in the dilatation of the cervical canal, partly on account of its narrowness and partly on account of its obliquity and of the fixed position of the cervix in the vaginal vault; but at length, by beginning with a No. 2 Hegar and proceeding very cautiously and deliberately, the cervix was opened up to the extent of admitting the forefinger. To the touch the uterine mucosa felt thick and slightly irregular, so the interior was scraped with the sharp curette, was cauterised with iodised phenol, and plugged with an iodoform gauze drain. The after-treatment was the same as usual; and with the exception of a rise of 1 degree of temperature on the night of the operation, and a little difficulty in passing water for twenty-four hours, the recovery was uninterrupted. At her next monthly period the patient, instead of having about twenty-four hours of acute agony, had three short and sharp attacks of pain, each lasting about an hour. This experience, she said, was a great improvement on the past. At the next period she had scarcely any sharp pain, only the dull, aching sensations that she always has in the pelvis. Since then even the latter kind of pain has gone, and she is practically quite well as regards the pelvic organs. Examination still shows some thickening in the left broad ligament, but the uterus is now much less fixed in position than before the operation. It may be mentioned that during the month following the operation there was copious leucorrhœa; this has now ceased.

b. Infected states of the Appendages.—I am well aware that I am treading on dangerous ground when I speak of curettage for disease of the Fallopian tubes, and I have not yet deliberately curetted a uterus with the intention of draining pus-containing tubes. The operation is still *sub judice;* in fact, there are some who would regard disease of the appendages as an absolute contra-indication to curetting even for simple uterine hæmorrhage. Whilst not sharing in the view of these gynecologists, I find it difficult to see how pus-containing tubes can be drained through the uterus, for this of course is the rationale of curettage in such cases; and my reason for thinking so is that in the observations on a considerable number of diseased Fallopian tubes which I made in conjunction with Dr J. D. Williams some time ago, the uterine orifice of the tube was invariably found blocked in hydro-, hæmato-, and pyo-salpinx. Still, certain cases which have been reported make one pause before making any definite statement on this point. Thus Liell (147[1]) has recently (February 1895) given the details of a case in which a double pyosalpinx evacuated through the uterus; laparotomy, which had been meditated, was abandoned, and curettage was performed instead; pregnancy occurred two years later, and the patient was safely delivered of a living child at the full term. Without instancing such a striking case as the above, W. M. Polk (104) has also brought forward a good deal of evidence to show that before performing laparotomy for recurrent salpingitis and peritonitis, it is well to give the patient a chance of the benefits that may and sometimes do follow curetting. Even if the operation fail the woman is in a better state to undergo laparotomy. Polk does not seem to be so sanguine as to expect any improvement to follow curetting when there is an abscess in the ovary as well as pus in the tube. Whether or not subsequent events confirm the teaching of Polk and others, their practice has done some good in checking the wholesale invasion of the pelvis by abdominal section, and in turning again the minds of gynecologists to more conservative methods.

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[1] The figures within parentheses refer to the bibliography, which will appear at the end of the paper when published in the *Obstetrical Society's Transactions.*

III. DYSMENORRHŒA AND STERILITY. — In a third group of indications for curettage I have placed certain kinds of dysmenorrhœa; but to some extent these have been already referred to under the head of endometritis and chronic infected cases. Of course every case of menstrual pain or of sterility, primary or acquired, is not a suitable one for the curette. It is doubtful whether uterine scraping is of the slightest avail in cases of maldevelopment of the uterus, and it certainly can do little, if any, good when the dysmenorrhœa is due to rheumatism or gout. But in membranous dysmenorrhœa it is clearly indicated; in fact, repeated uterine curettings offer probably the only real chance of cure. Then, again, in the cases of one-child sterility, where the uterus is enlarged and displaced, and in which there is great menstrual pain and leucorrhœa (as in Mrs D.'s case), curettage may make conception possible, or at any rate may diminish the dysmenorrhœa. Of course I should in such instances try other means of treatment first, such as ichthyol tampons and hot vaginal douches; but before removing the appendages in the dysmenorrhœa cases, and before subjecting sterile patients to a long course of treatment with pessaries (intra-uterine or vaginal) it seems to me to be fair, in properly chosen cases, to give curettage a chance. Possibly the accompanying cervical dilatation and the straightening of the uterus may be as powerful factors in the improvement as the curette; but it is certain that peri-uterine thickenings and adhesions do disappear in some of these cases. At any rate Travis Gibb (*Amer. Journ. Obst.*, xxxii. p. 257, 1895) reports sixteen successes out of twenty-six cases in which this treatment was adopted for sterility; in four of these also it is worthy of note that there were unmistakable evidences of tubal inflammation on one or both sides.

IV. DANGEROUS STATES IN PREGNANCY CALLING FOR THE INDUCTION OF ABORTION.—It must always be a very responsible matter to decide upon the induction of abortion, and one which requires consultation with a brother practitioner; but when, for such a condition as incoercible vomiting in pregnancy which is threatening to become speedily fatal, it has been decided to empty the uterus, then cervical dilatation followed by curettage meets the requirements of the case admirably. Probably the dull curette is better for this purpose than the sharp. The operation is both rapid and effective, and in these characters it compares favourably with other methods of inducing abortion in cases where the patient is so weak that every drop of blood is of value and every minute of importance. Of course it is only applicable before the end of the third month of pregnancy. Admirable papers on this indication for the curette are those of Puech (155) and Blanc (110) in France, and of Caruso (121) in Italy.

V. PROPHYLACTIC OR PRELIMINARY PROCEDURE IN CONNEXION WITH MAJOR OR MINOR GYNECOLOGICAL OPERATIONS.—The employment of curettage as a preliminary to other operative procedures on the genital organs is by many regarded as novel; but I saw it in operation in Berlin in 1885. In all plastic operations on the vagina, such as colporrhaphy, perineorrhaphy, repair of the cervix or of a fistula, or amputation of the cervix, it will manifestly be an advantage if we can be sure that no source of infection lies above the seat of surgical interference. So long, however, as there is a state of endometritis, and especially if there be a purulent discharge from the cervix, there will be a great risk of failure of healing by first intention, it may be of breaking down of union altogether. Especially does this apply to the cases of perineorrhaphy for prolapsus uteri, in which that organ is most often in a state of chronic endometritis. The curettage should be done about a week before the plastic operation, and the uterus and vagina packed with iodoform gauze.

Curettage is also recommended and employed before hysterectomy (vaginal or abdominal) for malignant disease or for fibroid growths, and then its prophylactic and diagnostic uses can be combined. Even in cases of laparotomy for acute peri-uterine suppuration, Krug (100) and Pryor (105) have found that the uterus may be safely curetted before the major operation, and that the procedure greatly increases the patient's chances of recovery. Pryor (105), indeed, thinks that most of the distress following laparotomy is due to the neglected endometritis and not to adhesions, a secondary pyosalpinx being set up in the tube left in cases of unilateral salpingo-oöphorectomy. Here a note of warning is necessary, and I may give it in Krug's own words: he "believes that the tyro is no more entitled to attempt the preliminary procedure than he is to do the final laparotomy in such difficult and complicated cases." I may refer here, in passing, to Bovée's case (134) in which curettage was performed as a preliminary to laparotomy for ruptured tubal pregnancy; the patient recovered. It has also been used before hysteropexy for displacement.

VI. CHRONIC CYSTITIS.—It remains to be stated that a possible therapeutic indication for the curette in gynecological practice is to be found in certain intractable cases of chronic cystitis. Under these circumstances, ordinary means of treatment having, of course, been tried and having failed, the medical man is left with only such troublesome expedients open to him as dilatation of the urethra or the making of an artificial vesico-vaginal fistula. In such instances Dr J. Verhoogen of Brussels (118A) has advised and practised vesical curettage. In four cases of chronic cystitis he reports a cure, and in three of tubercular cystitis, amelioration; but with regard to this use of the curette I have no personal experience to go upon.

B. DIAGNOSTIC USES.

A few words will suffice for all that I have to say regarding the diagnostic uses of the curette. The instrument may be passed into the interior of the uterus, and a fragment of the tissue removed and examined microscopically. In this way the distinction may be made, or confirmed, between endometritis, carcinoma, myoma, and possibly also sarcoma of the uterine body.

During recent years the justifiability of curetting in order to diagnose extra-uterine pregnancy has been called in question. What practice one follows in this matter depends entirely upon what one does with the passage of the sound in like circumstances. If the one instrument may be used, so may the other. J. C. Webster,[1] however, has shown that whilst the presence of decidual tissue is sufficient along with other signs to establish a diagnosis, its absence does not exclude ectopic pregnancy, for the mucosa may have been previously expelled.

DANGERS.

That the use of the uterine curette is accompanied by several dangers cannot be gainsaid; but that with care, and above all with antiseptic precautions, these dangers can be enormously diminished is also undoubted. Further, certain of the risks are certainly as much due to the dilatation and to the intra-uterine cauterisation and douching which accompany the curettage as to the use of the curette itself. Again, in certain cases of uterine perforation ascribed to curettage it would seem that the real cause was the *forceps* introduced to remove fragments of tissue. Whilst we must not minimise the risks of curetting, we must not at the same time exaggerate them. What the dangers really are may be shortly enumerated.

1. *Abortion.*—That the curette will, just like the uterine sound, be occasionally unwittingly introduced into the pregnant uterus by mistake must be admitted. A careful inquiry into the menstrual history, combined with a thorough bimanual examination prior to curetting, will usually prevent the occurrence of this accident. It may be said that in certain cases there is a red discharge from the uterus which prevents the patient's history giving

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[1] Webster (J. C.), *Ectopic Pregnancy*, p. 195, 1895.

us the clue. This is true, but in such instances the discharge probably points to a very abnormal state of intra-uterine affairs.

2. *Sepsis.*—Sepsis used to be a not infrequent result of curetting in the days when the operation was preceded by slow dilatation accomplished by a sponge tent,[1] when the procedure itself was carried out in the consulting-room and dispensary, and when the need for the strictest antisepsis was not recognised. By regarding curettage as an operation requiring as great care as any other in gynecology, by preparing the patient before curetting, and by seeing that every antiseptic precaution is taken during it, we can render septic infection from it almost unheard of. In the hands of good operators it must now be a very rare accident.

3. Among the rarer dangers of curettage is the *obliteration of the cavity of the uterus* thereafter. An extraordinary case of this kind is reported by Fritsch (125), in which, in a puerperal patient of 25 years, curettage for hæmorrhage was followed by a period of two years during which no menstrual flow occurred. At the end of this time an infantile uterus was discovered without the slightest trace of a cavity. Veit (157) reports a similar case in 1895 after an abortion, and Otto Küstner (145) one of partial uterine obliteration. It would appear that too energetic curettage in a puerperal uterus may set up or exaggerate the process of involution so as to bring about superinvolution with disappearance of the cavity in the viscus. It will, therefore, be well to deal lightly with the post-partum or post-abortum organ. At the same time the risk cannot be great, for the number of recorded cases is exceedingly small.

4. *Rupture of purulent collections in the pelvis* is a real danger in curetting, and it is for this reason that many would still forbid the operation when there is tubal or peritoneal mischief. At the same time the risk has, I think, been exaggerated, and with *chronic* annexial inflammations there is not much risk. Of course when there is known to be a pyosalpinx the question of curettage, done even in the most careful fashion and by the most reliable of operators, must be a matter for very grave investigation. It must be remembered that under the circumstances we are choosing between laparotomy, vaginal removal of the suppurating appendages, and curetting, and that should rupture occur during the last-named procedure we must be ready to do one of the others.

5. *Perforation of the uterine wall.*—Without agreeing with those who regard perforation of the uterus with the curette as a necessarily fatal accident, it is well not to go to the opposite extreme of thinking it a harmless incident. That this traumatism occasionally occurs is not to be wondered at when one remembers the enormous number of curettings that are now done, and the

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[1] F. Barnes (130), at the present time uses the laminaria tent, and holds that "it is itself aseptic, and even antiseptic, by reason of the chlorides, bromides, and iodides with which it is impregnated by the sea water in which it grew."

likelihood that in some of the cases there will be a uterus with a wall that is unusually friable or abnormally thin. It is said to be common in the puerperal uterus. In estimating the danger of perforation it ought to be borne in mind that in several of the cases of curetting in which this accident is reported, *e.g.*, those of Alberti (119), Veit, Gusserow, Orthmann, and Martin, forceps were introduced into the uterus, and by their means the herniation of the intestine which was present was produced. The fact has been specially pointed out by Dupluy; and Auvard (120) has insisted that perforation is not due to the curette, but to the preliminary use of separable metal dilators. Probably the passage of the curette through the uterine wall is not in itself likely to give rise to much harm unless either it or the wall is septic; but the passage of fluid from the uterus into the peritoneal cavity may give rise to serious symptoms, and of course if a loop of intestine be dragged into the uterine cavity grave results will undoubtedly follow. Sometimes perforation is only apparent, as in the cases where the uterine muscle suddenly passes from a state of contraction into one of relaxation; then the sensation given to the hand is very similar to that when the curette perforates the wall. Should grave symptoms follow a perforation one must be prepared to perform laparotomy; but, as I have already said, one ought not to embark upon a curetting without being prepared to follow it up with an abdominal section if necessity requires it. Usually, however, the packing of the uterus with iodoform gauze the moment the puncture is detected will prevent any mischief arising.

6. *Hæmorrhage.*—The danger of hæmorrhage during, or after, curetting is not great, and if it does occur it is not difficult, by packing, to apply sufficient pressure soon to stop it. Of course this is presupposing that curetting has been performed for one of its legitimate indications.

TECHNIQUE.

Preliminaries.—Too great care cannot be taken of all the preparatory arrangements in cases of curetting, and success will reward him who is most particular in these matters.

If it be possible to choose a time the week following menstruation ought to be fixed upon, and I usually curette the day after the flow has ceased, in order to give the uterine mucosa the longest possible period to revive before the irritation of the next menstrual epoch comes on. The cases in which curettage is employed for post-abortum hæmorrhage and sepsis and for post-partum septicæmia do not come under the action of this rule.

The patient ought to be kept in bed for the day before the operation; the urine should be carefully tested; and some form of opening medicine should be given, followed by an enema on the morning of the day of curetting. The vaginal canal should be douched on the evening preceding the operation, and also in the morning, and special attention should be paid to the thorough cleansing of the mons veneris and external genitals.

The Armamentarium.—The instruments employed will vary with the individual tastes and requirements of the operator; the following are those which I usually provide:—A vaginal speculum (Marion Sims', or a modification thereof, *e.g.* Auvard's retaining speculum), and one or two copper retractors; two or more strong-toothed volsellæ provided with clips; a set of uterine dilators, preferably Hegar's cones or Auvard's new hollow metal rods; sharp and irrigating curettes, preferably Récamier's double scoop, Thomas's spoon-saw, and Rheinstaedter's flushing curette (curetting forceps and the blunt curette I never use); a set of three or four uterine sounds, or Playfair's probes armed with cotton wool; a male catheter, No. 10; an intra-uterine douche of an approved pattern; a pair of curved packing forceps; and a sufficient number of pledgets of gauze (instead of sponges), and a long strip of iodoform gauze for packing the uterus, and another for the vagina. There ought also to be ready at hand a bottle of iodised phenol for cauterising the interior of the uterus, an anæsthetic, and antiseptic solutions (*e.g.*, perchloride of mercury, 1 in 5000). Where it is possible, the instruments ought to be of metal, and should be previously boiled for fifteen minutes in soda solution (1 to 3 per cent.).

Operator and his Assistants.—The operator ought to take the same personal precautions that he would in cases of abdominal section or hysterectomy. This is, I believe, a very important matter, especially in the cases in which curettage is performed, notwithstanding the existence of acute or chronic tubal or perimetric conditions. He ought, therefore, to be rigorously careful with regard to the thorough cleansing of his hands, and should wear a waterproof apron and sleeves. His assistant and the nurse ought to be equally careful.

The Operation.—The patient having been chloroformed, ought to be placed in the lithotomy (dorsal) posture rather than in the left lateral, on a table, and not in bed, facing a good light. The field of operation should be protected with sterilized towels, and the hips should be raised by and rest upon a pad of antiseptic cotton covered by mackintosh. The patient may be held in position by assistants, or in default one of the many "crutches" may be used.

Before proceeding to the actual operation fifteen minutes should be definitely set aside for the thorough cleansing and disinfecting of the external genitals and vagina. The hair ought preferably to be shaven off, and the parts, both vulvar and vaginal, are to be thoroughly scrubbed with soap and water, and thereafter washed with perchloride solution (1 in 4000). Too much care cannot be taken to ensure the intra-vaginal cleansing, and pledgets of gauze (instead of sponges) in sponge-holders may be used to scrub the walls, the fornices, and cervix. The urine should be drawn off before the operation begins.

The Sims' speculum is passed, and held in position by the assistant or nurse; then the operator lays hold of the cervix with two volsellæ, one grasping the anterior, the other the posterior lip. The use of two volsellæ distributes the traction upon the cervix better, and minimises the risk of laceration of the tissues. The uterus is then to be dragged gently downwards till the cervix is well within the range of sight and touch. Where the uterus is fixed this cannot, of course, be done, and ought not to be attempted; the cervix should then simply be fixed, and the speculum so adjusted as to give the best possible view of the parts without downward displacement. We should never attempt to introduce the curette without seeing the orifice of the cervical canal into which we are causing it to enter.

By means of a careful bimanual examination ascertain as accurately as possible the exact position and inclination of the uterus, so as to know the direction in which the dilators and curette are to be inserted. Then, having fixed the cervix, begin the dilatation. Of course, in post-partum cases this part of the process will very probably be unnecessary. Introduce first one of the smallest sizes of the Hegar dilators, which has been warmed and covered with carbolized vaseline. Begin, in most instances, with a No. 3 or 4, and let it pass in without the use of force, making sure always that it is being passed in the right direction. Leave it *in situ* whilst the next (larger) size is being warmed and greased, then withdraw it and introduce No. 5, and so on till No. 13 or 14 passes in easily. I have entirely given up the use of metal dilators with separate blades, for I regard them as unavoidably dangerous. The traction exercised upon the anterior and posterior lips of the cervix during dilatation should be made equal, and care should be taken that the teeth of the volsellæ do not protrude into the cervical canal. The rate of progress of the dilatation will vary in different cases according to the amount of resistance offered by the cervical tissues; but from fifteen to twenty minutes ought not to be too long to allow for the completion of this part of the operation.

The canal being now sufficiently open, it is well to dip the forefinger in an antiseptic solution and introduce it into the uterus before we pass in the curette. This is an important precautionary measure; if anything is felt in the interior of the uterus it may thus be removed by the finger alone. The curette must then be introduced; it ought to be applied in a systematic fashion, first to the anterior, then to the posterior, and then to the lateral walls of the uterus; finally, the fundus and the upper uterine angles should be scraped. The instrument should be guided in these manipulations by the operator's left hand placed on the patient's abdomen. After each scraping—which is, by the way, accompanied by a creaking or crackling sound, "le cri utérin"—we should withdraw the curette and wash off its contents for future microscopic examination into a cup of water placed near at hand. In the next place, the uterine cavity should be flushed out either with an ordinary intra-uterine douche or with a flushing curette. Then iodised phenol is to be applied to the interior of the uterus on armed sounds or probes, care being taken to protect the vaginal walls during the process. By means of a pair of curved dressing forceps, firmly pack the uterine cavity with a strip of iodoform gauze about two or three feet long and one inch wide. Put a plug of the same gauze in the vaginal canal, and a pad of antiseptic absorbent wool over the vulva, and keep the whole in position with a bandage. The patient is then put back to bed and treated as after any similar operation.

Of course, the operative details will differ slightly with the condition which has constituted the indication; but the line of conduct laid down above is that which will be found most generally useful. Of the technique in some of the rarest indications I have not thought it necessary to speak.

After-treatment.—After the operation the patient is to be kept at rest. The urine may require to be drawn off the same evening; but often this is quite unnecessary. The plug is usually removed on the third or fourth day (and with it the intra-uterine strip of gauze is taken away), and a smaller one put in its place; but in the instances in which curettage has been performed for suppurative conditions the gauze may require to be changed within twelve hours, and twice daily thereafter until it comes away dry. This latter statement applies especially to the post-abortum and post-partum cases. Douching is indicated after the removal of the plug. The patient should keep her bed for a week or for ten to fourteen days in the more serious cases. She ought to rest at the next menstrual epoch, as the flow may then be excessive. When the uterus has been curetted as a measure preliminary to another operation, then the second operation may be proceeded with at once, or not till four or five days later.

Marital relations ought not to be resumed till eight weeks after the curetting. In this way conception, if it occur, is more likely to lead to a successful gestation. At the same time cases are on record in which impregnation has occurred within a month of the operation. Bossi (132) has found that the new uterine mucosa can grow a decidua twenty-five days after curettage; but it does not at all follow that the decidua thus formed will be satisfactory.

If curettage be carried out in the way above indicated, and especially if rigorous antiseptic precautions be taken during the operation and uterine drainage maintained after it, the risk will be reduced to a minimum, and the chances of complete success in properly chosen cases will be largely increased.

IV.—CONGENITAL HYDRONEPHROSIS WITH OR WITHOUT DILATATION OF THE URETERS AND BLADDER.

With Two Illustrative Cases.

By C. Mabel Blackwood, L.R.C.P. & S.

Hydronephrosis is a somewhat rare condition; its etiology and symptoms are alike obscure. My attention was drawn to it by the following case which occurred in my practice:—

I attended Mrs A. in her confinement on May 15, 1895. Her previous health had been good. There was no history of miscarriages; she had had two female children born at full term and normally developed. Labour was natural, but tedious, owing to uterine inertia, and there was less liquor amnii than usual. The placenta had several succinturiate lobes. The child, a male, was born in an asphyxiated condition, and energetic treatment had to be adopted before breathing could be established. He remained quite healthy for twelve days, though his extremities were always blue and cold, and the nurse thought his abdomen unusually large. After the twelfth day the abdomen seemed tender; the legs were drawn up; he vomited his food, and cried continuously for two nights. He passed water without difficulty till a few hours before his death on the sixteenth day.

At the autopsy the upper lobes of both lungs were found to be expanded; the lower ones were atelectatic. The capsules of both kidneys were difficult to strip off. The kidneys were of normal size, the left being slightly the larger of the two. The substance was dense, the pelves not dilated. In size and appearance the left ureter resembled the large intestine. Joining the kidney at a normal angle, it presented a series of dilatations which were larger as it approached the bladder. Its walls were much thickened, and down one side were longitudinal fibrous bands. These bands were specially thickened at parts where it seemed to pull the walls longitudinally together, and cause constriction and twisting of the axis. On opening the ureter, at parts corresponding to the constrictions was found the mucous membrane in folds. These narrowed the lumen, and must have greatly obstructed the flow of urine. A narrow stylet was passed from the bladder into the ureter. The bladder was hypertrophied and enlarged. The right ureter presented the same conditions as the left, but to a minor degree.

Dr J. W. Ballantyne kindly lent me a second specimen. The child was born prematurely (8 months), and there was not more than one fluid ounce of liquor amnii. The child had had a rounded tumour, felt at the left side of the abdomen. It had double club-foot, and drop-wrist of right hand. The left kidney contained numerous small cysts; the pelvis was not dilated. The left ureter was sacculated, or, as Germans term it, "wurst formig," and enlarged to about the size of the large intestine. It was impossible to pass a probe along inside the ureter, owing to a series of mucous membrane folds which had free edges and formed pouches. There were at least nine of these. The bladder was distinctly enlarged. The right ureter was similar to left, but less dilated. It also had folds of mucous membrane. The urethra had an obstruction near meatus urinarius.

Maternal influence is scarcely proved. I find in one case (which showed the earlier stage of hydronephrosis), the mother suffered from gonorrhœal ovaritis, in another from peritonitis, and in a third from nephritis. Virchow gives the case of a woman who had three children born prematurely, and each with hydronephrosis.

There are several theories as to its causation.

A. R. Simpson says, in his paper on Hydramnios, that fœtal kidneys are only in action if depuration of fœtal blood is interfered with. He thinks the fœtus is healthy till birth; and then in consequence of an enlarged caput gallinaginis there is obstruction to flow of urine, and that this causes hydronephrosis.

Against this theory I find three cases of hydronephrosis in still-born children, and the changes found in infants of a few days seem to indicate obstruction for a longer period than since their birth.

Virchow thinks that hydronephrosis prevents full respiration (? mechanically). The obstruction begins in pelvis of kidney from occlusion of papillæ.

Roberts, in his book on Genito-urinary Diseases, mentions oblique ureters and valves as most frequent causes.

Englisch thinks in newly-born child valves at kidney are normal.

Roberts says that inflammation is often the cause of thickenings and adhesions of the urinary tract.

Arnauld on Hydronephrosis, Paris, 1891, gives the changes in development of the ureter as a cause. The urinary canal, at first posterior to the Wolffian canal, describes a sort of arc, and is successively behind, at the side of, and in front of the Wolffian canal. It is easily seen that a slight deviation would readily produce an abnormality.

Dr J. Thomson thinks it may be due to defective coördination of the nervous mechanism leading to contraction of the bladder while its sphincter was closed.

In 18 cases there are 14 males and 4 females. Hydronephrosis is apparently commoner on the right side, for in 15 cases, 7 were on the right, 4 on left, and 4 double. In 9 cases out of 28 were associated defects such as—*a*, imperforate anus; *b*, imperforate anus with spina bifida and club feet; *c*, club feet and no genital organs; *d*, *e*, and *f*, club feet; *g*, left testicle undescended; *h*, defect in septum ventriculorum; *i*, double ureters. The alleged cause in 17 cases was in—*a*, contraction of urethral orifice; *b*, constriction of ureter on entering the bladder, 4 cases; *c*, membrane of urethra, 3 cases; *d*, urethral obstruction, with valve where kidney joined ureter; *e*, obliteration in urethra; *f*, a double ureter, constriction where it joined before reaching bladder; *g*, constriction at pelvis of kidney; *h*, valve at ureter where it joined the kidney, and twist of ureter; *i*, narrowing of ureter where it joined the kidney; *j*, fibrous bands constricting longitudinally; *k*, mucous membrane forming valves; *l*, no external orifice and no urethra.

The cases of double hydronephrosis are apparently soonest fatal. Four cases of single hydronephrosis were alive at 3, 11, and 13 years respectively. Two of these were tapped, one was tapped and injected with iodine, the fourth had nephrectomy. If early infancy is survived this condition does not seem directly to cause death. There seems occasionally, however, a want of lung expansion, and subsequent weakness of that organ. In 11 cases the causes of death were as follows,—two died of atelectasis, two from atelectasis and pneumonia; tubercle was found in three cases; one died from operation, one from uræmia, and one from typhoid and debility.

The symptoms are obscure. Generally there is a localized swelling, and sometimes a sudden diminution of this, simultaneous with an increased flow of urine.

Some writers advise gentle massage, others repeated tapping. Arnauld thinks treatment should depend on etiology, and if this is not ascertainable the surgeon should make an exploratory incision, catheterize the ureter, and operate if necessary.

In a few cases it seems to cause so little inconvenience that interference is uncalled for.

V.—ICHTHYOL AS A THERAPEUTIC AGENT IN THE TREATMENT OF DISEASES OF THE UTERINE ANNEXA.

By Robert Bell, M.D., F.F.P. & S. G., Senior Physician to the Glasgow Hospital for Women.

Some four years ago I had the honour of reading a paper before the British Gynæcological Society upon the therapeutic effects of ichthyol in diseases of the uterine appendages. The results which I had obtained previous to that date had been so eminently satisfactory, that I have been encouraged to employ the treatment on a very much larger scale than I had previously the opportunity of doing. Before that date it was my almost uniform advice when patients suffering from diseases of the tubes or ovaries presented themselves, to advise the operation for their removal; this I did, under the impression that nothing short of operation could possibly remove the diseased condition. I may add that it was not because I had any fear of the result of operative treatment in these cases that has influenced me since that period in discarding it wherever I had the opportunity, as it has been my good fortune never to have had a fatal result after oöphorectomy. I remember quite well when I gave the results which followed the employment of ichthyol tampons in salpingitis, oöphoritis, hæmatoma, and pelvic cellulitis, that on the discussion of my paper several questions were asked with reference to the unfavourable effects that such a treatment produced on the neighbouring organs, especially the bladder. Now, I confess that ichthyol in a very small percentage of cases does produce unpleasant bladder symptoms, but these are so infinitesimal, and can be so easily modified, that I have no hesitation in saying that they cannot be said to militate in the slightest degree against the incalculable beneficial effects which result from the employment of this agent, and perhaps the most complete evidence in support of this statement may be adduced from the fact that although at the present day I am seeing probably three or four times as many cases of pelvic disease that I did at the time at which the paper referred to was written, my operations have fallen off in an inverse ratio. To me the effects of ichthyol in the treatment of these at one time intractable diseases are perfectly marvellous; were I to give instances of a very small percentage of the number of cases which I have seen beneficially affected and cured by the simple method of applying ichthyol tampons, I feel assured that operations of the serious nature necessary for the removal of diseased appendages would rapidly decrease to a considerable extent. When it is taken into account that a woman undergoing such an operation cannot possibly be considered completely convalescent under a period of two years, it cannot be gainsaid that this fact alone, discounting altogether the dangers that the operation necessarily involves, adds very much to the responsibility which the surgeon undertakes.

It is not my intention in this paper to quote from any of the many authorities on this important subject, but simply to give the results of my own experience, which I think, from the number of cases I have had the opportunity of treating, I am fairly entitled to do.

The result of careful observation has led me to the conclusion that it is very rarely indeed, if ever, the tubes or ovaries become diseased independent of some pre-existent disease or lesion which has occurred in the uterus or cervix; and as these arise from so many different causes, I think it imperative, in a paper bearing on this subject, to glance at all events at the ætiology of the various pelvic disorders which are daily coming under my observation, and in the treatment of which I find ichthyol so eminently useful, seeing the efficacy of the therapeutic (as it can easily be imagined) would be very much handicapped, if not altogether destroyed, were the primary diseases either in the first instance or simultaneously not attended to.

To prevent any misapprehension as to the particular diseases which are included in this group, I must guard the statement which I have just made, by stating that I only refer to diseases which are septic or inflammatory in their nature. I make the reservation that cystic, malignant, fibroid, and tuberculous affections may be excluded from the category of those diseases of the ovaries which are dependent upon a primary uterine origin, and which are certainly beyond the range of ichthyol as a therapeutic agent. It is rarely, indeed, that we find salpingitis and its sequelæ without a pre-existing endometritis, and this again is dependent upon so many pathogenic sources that it would be quite foreign to my subject to trace its ætiology throughout. One powerful factor, however, must not be overlooked, as it has an important bearing upon the causation of oöphoritis, as well as being an invariable precursor of endometritis. I refer to laceration of the cervix, when it will be invariably ascertained that in the circumstances of an ovary being affected, it is upon the side on which the laceration exists. It therefore becomes a necessity that, simultaneously with the application of ichthyol, this lesion be attended to. If, however, the fissure of the cervix has been in existence for any considerable period, it may prove a difficult matter to deal with it before the diseased condition of the endometrium has been at least partially rectified, and the thickening of the cervix resulting from this has been reduced, so as to bring it into a favourable condition for trachelorrhaphy. So far as my experience teaches me, it is not necessary to repair the cervix to ensure recovery of the endometrium; but the chances are that the recovery will not be permanent if the lesion is permitted to continue, and certainly the ovary will not have nearly such a good chance if trachelorrhaphy is not resorted to.

Few, I venture to affirm, will differ from me in coming to the conclusion that salpingitis with its consequent evils almost invariably results from the inflammatory condition in endometritis spreading by continuity of tissue, and also that in many instances the ovaries become secondarily affected to the tubal disease. This, I pointed out in a previous paper, is probably communicated through the lymphatic system; it stands to reason, therefore, that in treating inflammatory conditions of the ovaries and tubes it is absolutely necessary to remove the primary morbid conditions which have given rise to the secondary affections, in the manner I have indicated.

Two marked cases will suffice to indicate the line of treatment which I have found most beneficial, as both of these ladies came to me from England for treatment, and in both instances removal of the ovaries had been recommended by men whose reputation is of the highest order. Both patients were married and had borne children; the one had been an invalid for eight years, and the other for over six, and during these periods both had been sterile. One ovary in each case was considerably enlarged and exceedingly tender, while the other was diseased to a less marked degree. In both instances endometritis with considerable hyperplasia existed, and the general health was very much reduced, and great pain on locomotion was experienced by both. I commenced the treatment by curetting, employing my dredge curette, and afterwards applied iodised phenol once a week to the whole of the endometrium, while a tampon saturated with ichthyol was introduced bi-weekly. This treatment was kept up for about three months in each case, a gradual improvement in health and relief of the local symptoms being the result. One of these patients (the younger of the two) became pregnant within a year afterwards, and was delivered of a healthy child at the full term. Both are at present in the enjoyment of good health.

In these two particular instances there was no cervical lesion, but a history of subinvolution, which was evidently the *casus morbi.*

In another case, where gonorrhœal infection contracted shortly after marriage was the *origo malis,* sterility had existed for twelve years, and both tubes were diseased. Curetting and the bi-weekly application of iodised phenol, followed each time by the introduction of a glycerine and alum tampon, was sufficient to restore the integrity of the uterus and tubes after a prolonged course of treatment, but I am convinced that had the therapeutic effects of ichthyol been understood at that time the convalescence would not have been so protracted. As it was, however, when the morbid condition had disappeared a child-bearing epoch was established and continued for some years.

I quote this case simply to show how important it is to take measures to remove the primary disease or lesion simultaneously with the treatment of the secondary, and this is most emphatically the case where laceration of the cervix co-exists. To my mind, therefore, if we make it our primary object to treat those affections of the uterus which are within our reach, and succeed in restoring the organ to its healthy condition, we have a most reliable and almost uniformly potent therapeutic agent in ichthyol where inflammatory conditions of the uterine appendages co-exist.

VI.—AN INQUIRY INTO THE PHYSIOLOGY OF THE ACTION OF THERMAL SALINE BATHS AND RESISTANCE EXERCISES IN THE TREATMENT OF CHRONIC HEART DISEASE (THE NAUHEIM AND SCHOTT SYSTEM).

By R. F. C. Leith, M.B., B.Sc., M.A., F.R.C.P.E., etc., Lecturer on Pathology, School of Medicine of the Royal Colleges, and School of Medicine for Women, Edinburgh; Pathologist to the Royal Infirmary, Edinburgh; Examiner in Pathology, University of Glasgow, and Royal College of Physicians, Edinburgh, etc.

(*Read before the Medico-Chirurgical Society of Edinburgh*, 15*th January* 1896.)

(*Concluded from page* 814.)

The Pulse.—The alterations may be estimated by the finger or sphygmograph, preferably the former. Sphygmograms are useful for recording purposes, and save descriptions, but a too minute reading of them is apt to lead into error. The following agents are all brought into action by the bath, viz., rest, temperature, water, salines, and carbonic acid; and I have endeavoured to test their separate as well as combined effects upon the pulse by trying each in turn.

1. *Rest.*—The patient is enjoined to enter the bath quietly, lie down at once, and remain without moving during the whole period of immersion. Rest is thus secured; and in order to test its effect in a comparable manner I first caused a healthy person to lie quietly upon a couch for fifteen minutes. His pulse diminished in rate and increased in strength. I found this to be even more marked in cases of diseased hearts. Simple changes of posture from the erect to the reclining position, as is well known, are enough in many cases to effect a slight change. The effect of the rest alone is therefore distinct.

2. *Temperature.*—The temperature of the baths varies between 95° and 86° F. An air-bath of 95° F. feels considerably warmer than a water-bath at the same temperature. Something between 85° to 90° F. is probably its equivalent. By means of a tent bed in which the disrobed patient lay, his head being uncovered, I succeeded in testing the effect of an air-bath of about 90° F. The results were rather indefinite. If the temperature rose to about 95° F., as it sometimes did, the pulse was slightly increased in rate, whereas if it remained about 90° F. it was slightly diminished; if it fell a little lower, the pulse diminution became more marked. At or about 90° F. it appeared to be much the same or a little less than was formerly obtained under rest alone, while at 85° or less it seemed to be rather more. This appeared to show that temperatures between 90° and 95° were indifferent, while those under the former figure had a certain definite action.

3. *The simple Thermal Bath.*—In this we have the special mechanical and physical properties of the water added to those of the temperature and rest. The pressure which the weight of the water mass exerts upon the body of the latter is considerable. To the usual atmosphere the weight of the water is added. Mauther says the increase for a column of water 2 feet high is equal to $\frac{1}{16}$ of the atmospheric pressure, or about 2280 lbs. more than in ordinary air. If we are to judge by the sensations of the patient, a bath of 95° F. feels considerably colder than air at this temperature, the latter being more nearly equivalent to a bath of 105° F. or thereabout. I do not know, however, whether we can say that the temperature effect of a bath at 95° F. is greater than the mere difference between its temperature and that of the body would warrant. The effect of a bath at this temperature continued for fifteen minutes, was usually greater than that of an air-bath 5° lower, or of rest alone. The difference became more pronounced as the temperature was lowered. At a temperature of 90° F., a diminution of pulse-rate of five to seven beats in a minute, with an increase in strength, was quite common.

4. *The Saline Bath.*—Sodium chloride was next added to the bath in the proportion of 1 to 3 lbs. to the 10 gallons in different

cases. Its effect was generally to emphasize the change in the pulse, and to make the bath more agreeable to the patient. This was more noticeable in the stronger baths, which are considerably stronger in salt than sea water. The bath was spoken of as warmer and more stimulating than the simple thermal one. Calcium chloride and barium chloride were next added, first separately and then together, in the proportion of 1½ to 2 ounces to the 10 gallons, without any appreciable effect. Their action without the previous addition of sodium chloride was then tested, with a similar result.

5. *The Carbonic Acid.*—This was mostly added to the baths by means of Sandow's tablets, first recommended to me by Dr Bezly Thorne. Its action was generally quite decided, and led to a further diminution in the rate and increase in the strength of the pulse. When added to a simple plain water-bath its action was very nearly if not as pronounced as when the salines also were present. It added a pleasantness and buoyancy to the bath, very agreeable to the patient, and considerably increased the sensation of warmth. Its presence undoubtedly enables lower temperatures (86° F.) to be more readily borne.

All the factors at work seem to have a certain amount of influence, and the final result may be regarded as due to the summation of their actions. The temperature as administered through the agency of the water is probably one of the most important of these, as its effects are extensive and far-reaching. Temperatures below body-heat applied to the skin cause a contraction of the cutaneous vessels over the part affected, higher temperatures causing dilatation. This result is brought about partly by a direct action upon the walls of the vessels themselves and their local nerve mechanism, and partly by reflex action through the nervous system. Alterations in the calibre of the cutaneous vessels must affect the amount of the lymph stream, and hence the nutrition of the surrounding tissues, and even the flow through the veins and lymphatics. As the whole body is immersed, the area affected is a most extensive one. Further, there is reason to believe that the internal vessels are also affected, and that extensive cutaneous vascular contraction is always accompanied by a certain amount of internal vascular dilatation, and *vice versa;* and if we are to believe the experiments of Schüller, this is also true of that part of the body not immersed, viz., the head. He observed the vessels of the pia mater in rabbits after trephining the lateral walls of the cranium at both sides of the sagittal suture, and found that cold baths produced dilatation of the vessels in proportion to the extent of the body immersed, while warm baths had the opposite effect. Winternitz believes that his plethysmograph experiments corroborate these results, and that the contraction produced by thermal influence in a large vascular district causes compensatory dilatation of the vessels in other parts of the body. The plethysmograph registered an increase in volume of the arm during a cold sitz bath, and the opposite during a warm one (95° F.) It will be remembered that this latter temperature is that recommended by the Schott System as most suitable for the commencement of a course of the baths. As it is slightly under the temperature of the skin, we would expect that its thermal influence, if any, would lead to a slight contraction of the cutaneous vessels. Instead of this, a definite dilatation was given, and it is probably to be accounted for by the definite fall in cutaneous temperature caused by disrobing. This would apparently mean a certain contraction of internal vessels, especially of those of the brain. The regular recurrence of the vascular changes may readily enough bring about certain changes in nutrition and tissue metabolism which may come to have an important influence upon abnormal processes. We need not stay to consider the tissue changes, if any, consequent upon abstraction of heat from the body during the bath. The local cutaneous mechanism called into play prevents any reduction in the temperature of the body from such moderate degrees of temperature changes as we employ.

The influence upon sweat secretion must be noticed. During the period of immersion both insensible perspiration and sweat secretion cease. They may, however, be increased afterwards. Whether this has any local action or not it is difficult to say. Heymann and Krebs believe that it saturates the nerve endings and diminishes their excitability. Perhaps it in a measure explains the increased diuresis so frequently observed after the bath. All these actions are more or less independent of the nervous system, and there can be no doubt that there are further actions specially referable to its influence. All thermal influences affect the cutaneous terminations of the ordinary sensory nerves, and thus reflexly the vasomotor and cardio-inhibitory centres. There is no reason to believe that such slight stimuli as our system uses afford any exception to this general physiological law. There will consequently be a slight tendency towards dilatation of the cutaneous vessels of the body generally, and a contraction of those of the head, accompanied by a slight stimulation of the cardio-inhibitory centre, which will tend to increase the strength and slow the beat of the heart.

But we have, further, to consider the influence in this relationship of the various chemical constituents which the bath contains. It is held by many that its saline ingredients act mainly by direct nervous stimulation, and the pleasant warm stimulating sensation experienced by the patient is pointed to as a proof of this contention. Those of us who have experienced the pleasurable tingling, stimulating sensations which follow a dip in the sea are perhaps too readily inclined to support this. The conditions are far from being similar. The average sea temperature is little over 50° F., and much that we may be inclined to attribute to the salt is really due to the thermal influence. It is easy to see how the sodium, calcium, or barium chlorides, especially the first named, may have some little influence, in virtue of the increase they give to the specific gravity of the water, and the encouragement they may give to exosmotic action. It is mainly, however, a physical or mechanical action, and not a chemical one. The histological structure of the skin makes the possibility of a direct stimulation of the sensory nerve endings very difficult of acceptation.

It is allowed on all hands that no absorption of mineral salts occurs through the skin, but it is maintained by Schott, Keller, and others that a certain imbibition by the skin is possible, whereby the chemical ingredients are brought in contact with the cutaneous nerve endings. Schott supports his view by saying, that when the skin is bathed with plain water after a saline bath, the salt continues to come away for a much longer time than one would expect if it did not penetrate for some distance into the skin. Ranvier's investigations have shown that these nerve endings are not confined to the corium, as was generally believed, but are distributed within the deeper layers of the stratum Malphigii. Even so, however, the mineral salts have a considerable thickness of epidermis to pass before they are reached; and it is difficult to understand how they can penetrate through these layers and yet avoid the lymph channels which lie between the prickle cells external to the nerve endings. Would not an entrance into these lymph channels mean a transference into the lymphatics of the true skin and an absorption into the system which is denied by universal experience? I find it, therefore, difficult to follow Keller's explanations of the observations he carefully made upon himself. He found that a 3 per cent. sodium chloride bath, at 93° F. and of thirteen minutes' duration, has—(1) a distinct diuretic effect, and produces a marked increase of the chlorides of the urine, while plain water baths have the opposite effect; (2) a diminution of phosphoric acid; (3) no appreciable influence upon the nitrogenous waste. Robin, on the other hand, finds that they increase the nitrogenous metabolism and the oxidation of the products of the retrograde metamorphoses of albuminoids. Dr August Schott, in the Laboratory at Breslau, made certain observations upon shaved rabbits. He used a bath with a movable partition dividing it into two chambers, one containing plain water, the other a 10 per cent. salt solution of the same temperature. By raising the partition so as to allow the latter to mix with the former, he found that the blood-pressure of the animals immersed therein rose 5 to 10 mm. These results have not, so far as I know, been corroborated, and must be received with caution. It is conceivable that the delicate operation of shaving the rabbit—animals which are apt, even under the most favourable circumstances, to prove unsatisfactory subjects for blood-pressure experiments—may have something to do with the result. I cannot say that, so far as the ordinary methods of observation went, my cases disclosed any sign of special stimulation brought about by the presence of the salines beyond the subjective sensations of the patient himself. The increase they produce in the specific gravity and their influence upon osmotic action in connexion with the skin, may indeed be the only influences they call into play. I have endeavoured to estimate their effect upon the vascular system by means of the plethysmograph, using Dr Milne Murray's water manometer as the recording instrument. I wish to record my grateful thanks to him and to Dr Noël Paton for much valuable advice and assistance in this part of my experiments.

So far my observations have not been very definite. They have been made upon two different individuals,—one a lad of 18, and the other an adult male, both healthy. With the patient sitting in an ordinary full-sized bath, water at 95° F. was gradually run in until it entirely covered the legs and pelvis to the level of the anterior superior iliac spines. The plethysmograph recorded practically no change, so that if both these and Winternitz's observations are to be depended on, a different effect would seem to be produced by a rapid and by a slow immersion, to be accounted for probably by the cutaneous mechanism becoming accustomed to the stimulation. The effect of salines and of carbonic acid were tried only in one of the cases. Sea-salt was added in the proportion of 7 lbs. to about 25 gallons of water at a temperature of 90° F. for a duration of several minutes, and gave a negative result, the plethysmograph showing neither rise nor fall. The same result followed upon the addition of 1 lb. of calcium and $\frac{3}{4}$ of a lb. of barium chloride respectively, over fifteen minutes being allowed for their effects to become established.

So far as these observations go, and they have been too limited to be more than suggestive, they seem to corroborate those made on other lines. The salines would appear to have no direct influence upon the vascular system. It cannot be said, however, that these experiments test in any way their influence upon the nervous system, except, perhaps, in rendering improbable an ordinary stimulation of sensory nerves. If the large tract of cutaneous nerves subjected to the possibility of stimulation by the salines had been affected, might we not have expected some contraction of the vessels of the arm as the result of stimulation of the general vasomotor centres?

On the other hand, if we place any reliance upon the evidence so extensively brought forward by physicians to show that salt-water baths and douches are of very great value in the treatment of various nervous derangements, we must allow that some form of nervous stimulation would appear to be possible. Whether this may be brought about by electrical contact currents, which would naturally vary with differently constituted fluids, I am not at present in a position to determine.

The effect of carbonic acid was next tried, the salines being present and the temperature 86° F. A very brisk effervescence was at once obtained by means of Sandow's tablets, and kept up for ten minutes or more. A small and regular diminution in pressure at once showed itself, and continued to increase so long as the record was taken. This showed a contraction of the volume, and thus an increase of pressure in the arm. (The plethysmographic tracings were exhibited.) In Schott's experiments, already referred to, he found that its addition raised the blood-pressure 10, 20, or even 30 mm. Riedlin writes enthusiastically of its influence, and considers that it is the most potent curative agent in mineral water baths. Its presence enables the body to be subjected to much lower temperatures and for longer periods. This he attributes to its stimulating effect upon the skin, by which it is absorbed, when the pressure under which it exists in the bath exceeds that of the CO_2 in the bloodvessels and lymphatics. Schott also supports its absorption under the same circumstances, and believes that its action is mainly due to stimulation of the cardio-inhibitory and other centres. Röhrig, Brémond, and others believe that they succeeded in showing, by experiments on animals, that the skin can absorb gases, and that finely atomised watery solutions of various composition, or such in the form of gas or vapour, will penetrate the skin. If it be absorbed into the blood to any extent, then doubtless it may exert some stimulating influence upon both the cardio-inhibitory and vasomotor centres, judging by the effect of venous blood upon them. This does not follow as a matter of course, as there is the diminution of oxygen to be considered, but I do not know that it is important enough to warrant further discussion here. I can hardly claim to have studied all the experiments made upon the action of CO_2, but so far as I have done so, I have found no such clear proof as would enable me to maintain that it can be absorbed in the bath by the unbroken skin, nor do I think it necessary in order to explain its physiological effects. We have the bubbles of gas forming an almost continuous covering to the skin, so numerous are they; and though they are constantly being given off and replenished, yet this takes place only to a very limited extent over any given area at one time. The escaping bodily heat may thus be retained for a little by this layer, which will protect the body from the colder surrounding water. This may account in part for the marked feeling of warmth imparted to the skin by the effervescing bath. If the bather moves, the layer of gas is at once liberated over a large area, and a cold sensation is immediately experienced by actual contact with the water. One would fancy that, if the feeling of warmth were in any way due to absorption, it would hardly disappear so suddenly on the slightest movement.

Be this as it may, however, there is another and more important action. The bubbles of CO_2 are constantly impinging upon the skin, and dealing it thousands upon thousands of little blows. The pharynx readily appreciates them every time we take a draught of effervescing water. The cutaneous nerve endings exposed to their action in the bath are actively stimulated. One result of this stimulation is probably a dilatation of the vessels of this area with a contraction of those in the rest of the body, brought about mainly through the influence of the general vasomotor centres. This would explain the rise in blood-pressure recorded by my plethysmographic observations, and presumably also by Schott's experiments. The feeling of warmth experienced over the immersed area may be partly, if not entirely, due to this dilatation of its cutaneous vessels. There may even be other effects, as a slight stimulation of the cardio-inhibitory and respiratory centres; but it cannot, however, be too carefully remembered that just as the stimulus is gentle, so also will its results be gentle, influenced though they may be to a certain extent by the irritability of the individual. The probability, also, of a certain amount of absorption of CO_2 by the respiratory mucous membrane must not be lost sight of, for the atmosphere which the patient breathes becomes steadily charged with it.

Effect upon the Heart.—The primary action upon the heart of stimulation by temperature has long been known, and Röhrig's experiments pointed to reflected impulse of innervation through the vagi as the cause, inasmuch as their division suspended it. Dr Schott believes that the baths act directly upon the heart in the same manner from the triple stimulation of the temperature, salines, and CO_2. Dr Douglas Powell would seem to be of the same belief, as in speaking of tachycardia (*Brit. Med. Journal*, Nov. 10, 1894, p. 1039), he says—"And doubtless, as in the very analogous cases of exophthalmic goitre, the strong brine baths of Nauheim, by their stimulating effect on the vagus centres, will prove of value." Now, so far as the evidence before us goes, we are led to think that the baths have very little influence indeed in this direction, and that, such as it is, it is attributable slightly to the temperature, chiefly to the CO_2, and but little, if at all, to the salines. The diminution in rate and increase in strength of the cardiac contractions produced in this way must be very slight indeed, and altogether inadequate to bring about any gross change in the size of the heart.

Effect upon the Respiration.—It becomes more active. It diminishes slightly in rate, but becomes markedly deeper, and it is to be remembered that deeper breathing is much more effectual than more frequent breathing in carrying off the products of a more active internal respiration. An increased elimination of CO_2 and moisture and an increased absorption of oxygen will thus be brought about. This will, no doubt, directly influence tissue metabolism and nutrition, but may also increase the ordinary influences of respiration upon the circulation, by the more oxygenated state of the blood affecting the vasomotor centre, by its influence upon the heart and bloodvessels, brought about by nervous action, and by its direct mechanical effect upon blood-pressure. Thus deeper inspirations promote the return of the blood-flow through the lungs to the heart, and deep expirations have an opposite effect. I doubt if this can have any appreciable influence, but the compression of the abdominal viscera ought to facilitate the return of blood to the heart, and so stimulate it by increasing its endocardial pressure.

Effect upon the Blood.—Winternitz and his assistants found that cold baths produced an increase of the red blood-corpuscles, and also of the white, with a 14 per cent. increase of the hæmoglobin. The maximum effect was sometimes manifested an hour afterwards, and lasted often for two hours. Warm baths had the opposite effect. He does not regard this as due to new formation, but to increased activity of the heart and circulation and improved nerve tone, the red and white cells being thus driven out of the organs in which they are accumulated. Kellogg obtained corroborative results, and agrees with his explanation. Grawitz agrees with the results but not with the explanation. He believes that warm baths cause the blood to be less concentrated, acting by a stimulation of the vasomotor nerve apparatus, leading to a contraction of the vessels, and preventing transudation of fluid into the tissues. So far as I have been able myself to try this method, I have obtained very little difference indeed from temperatures between 95° and 85° F.,—a trifling increase, but nothing more.

It would, therefore, appear that "the System" acts mainly by regularly repeated alterations in the blood-pressure, the distribution of the blood, the osmotic actions, and the various external and internal secretions. The natural ebb and flow between cutaneous and internal vessels is brought more systematically and regularly into play. Such changes may undoubtedly stimulate tissue metabolism and lead to the correction of vices and the establishment of improvements in general nutrition. The heart will participate in these improvements, and it is well known that its beat varies largely in consequence of changes in its own metabolism. There is no evidence whatever to support claims which maintain a great and direct influence upon the heart, whether by nervous channels or by greatly lessening the peripheral resistance. There is, indeed, every reason to believe that although the cutaneous vessels may be somewhat dilated, the general sum of arterial pressure, and hence the peripheral resistance, is actually somewhat increased. This seems to be entirely in keeping with the improvement observed in the cardiac conditions, for among the physical or mechanical circumstances of the heart which affect its beat, the most important is perhaps the amount of distension of its cavities. The contractions of cardiac muscles, like those of any other muscle, are increased by the resistance, within certain limits, which they have to overcome. A full ventricle will contract more vigorously than one less distended, while if the limit at which resistance is beneficial be passed, an over-distended ventricle will fail to contract at all.

There is yet one other influence which must not be lost sight of in any summation of the different methods of action of "the System," and it is that of the mental factor, to which, however, I feel loth to refer, as we have no means of properly explaining or estimating it. The suffering lay or even medical mind is markedly susceptible to the influences of any line of treatment which can apparently offer such striking and rapid results by means so tangible, pleasant, and easily understood. A patient convinced of his daily improvement, and of his certain recovery a few weeks later, is often already half cured. Much faith is a wonderful healer, and when it is accompanied by a "complete change" and pleasant society, such as it is the duty of a health-resort to provide, it may work wonders, and we must be on our guard lest we give our treatment the entire credit of results which it may have had very little hand in producing.

It will be necessary to say but a few words further in special examination of the resistance exercises. The physiological explanation underlying their action is simpler than that of the baths, to which they may form valuable adjuncts. They may, indeed, at times prove useful where the baths are contraindicated, but, on the whole, they are inferior to them both in range of applicability and in efficacy. They are sensible and well thought out exercises, excellently suited to accomplish their purpose of bringing each group of muscles in the trunk and limbs into action in turn. They substitute regular and graduated movements capable of being perfectly controlled by the skilled attendant, so as to suit a considerable variety of conditions for exercise often irregular, spasmodic, and ill-regulated which the patient, left to his own devices, is apt to indulge in. When thus employed so as not to overtax the patient at any one time, their physiological action resembles that of all other beneficial muscular exercise. There will be dilatation of the bloodvessels within the muscles, increased tissue metabolism, and more rapid elimination of effete materials. This will gradually bring about a better general nutrition. I cannot see how even the most gentle of such exercises can fail to press upon the veins and favour the return of the venous blood to the heart. Dr J. F. H. Broadbent thinks that this may occur. It is an ingenious suggestion put forward to account for the diminution apparently observed in the size of the heart, which is thus due to a lessening of peripheral resistance afforded by this means together with the vascular dilatation within the muscles. But if we deny this direct diminution in the size of the heart,—as, for the reasons already given, I think we must do,—the suggestion becomes unnecessary, as also does the even more hypothetical and improbable one of Dr Schott, viz., reflected vagal stimulation brought about by *afferent impulses* carried to the cardio-inhibitory centre by means of the *motor nerves.* We know of nothing which leads us to place such a difference between gentle and vigorous muscular exercise. They must both hasten the circulation and favour, although in different degrees, the return of the venous blood to the heart. This will be most marked in the abdominal bloodvessels. Compression of the abdomen instinctively results with the employment of the resistance exercises. In this way an increased intracardial stimulation follows, and will naturally lead to an increased blood-pressure. It is possible that the vascular dilatation within the muscles is not compensated for by a corresponding contraction in bloodvessels in other regions, and is, besides, greater in amount than that of the increase due to the quickened venous flow. Some observations of Dr Lauder Brunton in his Harveian Oration of last year seem to support this. There would in this case be an actual lessening of peripheral resistance and a diminution in blood-pressure, but this is rendered improbable by the decrease in rate and increase in strength of the pulse.

The physiological problems raised by "the System" are both many and complex, and there must be much still hidden from us which the future may reveal, and which may bring about a more perfect understanding of its actions. So far as they are at present known to us, it is readily seen that its scope of application is far wider than that of any individual drug, but to assert its applicability to all classes of cardiac derangements, reserving only advanced arterio-capillary sclerosis, aneurisms, and serious myocarditis, is surely in so many words to proclaim its impotence. It is but natural that it should fail. Evil habits of nutrition which measure their existence by months or years are not to be got rid of by one or even two courses of "the System" of a few weeks' duration at Nauheim or anywhere else. I have already met with failures and recurrences such as the present literature of the subject makes no mention of, and they have but served to increase my belief in its value when used in suitable cases. While we remember that it is capable of doing much good, we must not forget that it is also capable of doing harm. It has now been sufficiently proved to warrant its trial in suitable cases, but they must be chosen with judgment. To use it rashly and with too great expectations is certain to lead to disappointment and to reflect injuriously upon "the System" itself. Moreover, as at present enunciated it does not seem to me to be as useful as it might. It is at once too wide and too restricted,—too wide in its claims and too restricted in its limitations. Why, for instance, should we pause at 86° F.? Why not go further in suitable cases, and make use of the well-known effects of still lower temperatures, inasmuch as we can so easily regulate their influence by the duration of time we employ them. The resistance exercises are good so far as they go, but why should they not be combined with massage, or passive or active exercises of different kinds? Eccles, Campbell, and others have testified to the value of the latter. An intelligent use of dumb-bells and other gymnastic appliances ought to prove quite as effectual in some, if not in all, cases as the resistance exercises themselves, and they have indeed done so in my hands in the opportunities I have so far had of putting them into practice.

I have herein endeavoured to lay before you the lines of a sound physiological working of "the System," which promises to prove a valuable remedy in many cases of chronic heart disease, but whether I have succeeded or not, I am not without hope that I have prepared the way for the clearer understanding and appreciation of its applicability and usefulness.

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53. HERSCHELL.—"Critical Remarks upon the Nauheim Treatment of Heart Disease," *The Lancet*, Feb. 15, p. 413, 1896. He failed to get any favourable results, and entirely condemns the system.

54. BROWNE, RALPH.—"The Nauheim Treatment of Heart Disease": a Letter, *The Lancet*, Feb. 29, 1896, p. 586. He emphasises the influence of the CO_2 and its absorption by the lungs.

55. BEZLY THORNE.—"Notes on Certain Changes in the Cardio-Vascular System which are induced by treatment according to the Schott Methods," *The Brit. Med. Journ.*, March 14, 1896, p. 653. He distinguishes an oval, bipartite, and conoid form of dilated heart as made out by auscultatory percussion, which is in my opinion quite untrustworthy.

Part Second.

REVIEWS.

Report on Yaws in Tobago, Grenada, St Vincent, St Lucia, and the Leeward Islands, addressed to the Right Honourable Lord Knutsford, G.C.M.G., Her Majesty's Principal Secretary of State for the Colonies. By H. A. ALFORD NICHOLLS, M.D., F.L.S. London: Eyre & Spottiswoode: 1894.

THE predominance or exclusive occurrence of some diseases among certain races of mankind is a topic of much interest and scientific importance. Amid these, yaws has long taken a noteworthy place. In consequence of the unsatisfactory state of medical opinion in the West Indies as to the possibility of crushing it out, a complete report as to its progress during the last fifteen years, and on the success of the various measures adopted in the several islands for coping with it, was called for in 1889, and Dr Nicholls was selected for this onerous duty. The manner in which he proceeded to execute this, and the thorough and exhaustive statement which he has furnished, proves the wisdom of the choice, and this has been further recognised by his having been one of the rare recipients by members of the medical profession of the New Year's Honours. The report in the first place deals with the history of yaws in the West Indies in general, then in each of the islands in particular. In order to prepare this, Dr Nicholls not only visited these, spending a considerable time in each, but consulted all the available literature contained in reports on previous occasions, and endeavoured to learn from the inhabitants themselves all the information they could give him. He next proceeded to address a series of questions to the principal medical officers in the islands, calculated to elicit their views with regard to different points. These interrogations took up such matters as the effect of climate, locality, diet, and hygiene on the prevalence and spread of the disease, racial immunity, the connexion between yaws and syphilis or tuberculosis, its possible communication by vaccination, its contagiousness, and its treatment. Having received the replies, these were analysed and commented on, and the statements made compared with those of authors who have written on the subject. Then from his own large experience Dr Nicholls draws a picture of the complaint, treats of its etiology, diagnosis, and the various complications which aggravate or obscure it, and finally investigates, more fully than has hitherto been done, into its histology and pathology. No fewer than thirty illustrations, many coloured, are appended, which convey an excellent idea of its clinical features and microscopic anatomy. To this is added a criticism of remarks by Mr Hutchinson on Mr Numa Rat's essay, besides some interesting statistics. From this it is evident that this is much more than a formal report, and indeed it will constitute for a long time to come the work of reference on yaws. The author settles the origin of the name. "The Celtic word *ias*, pronounced yas, and meaning heat, boiling or bubbling up, is the source of the English word yaw, the primary signification of which, according to Webster, is 'to rise in blisters, breaking in white froth, as cane juice in the sugar works.'" It would seem that it was brought to the West Indies from Africa, where it has been endemic from time immemorial, by the slaves, who could hardly escape contracting it, if previously free, from those diseased in the pestilential atmosphere of a closely-packed slave-ship. On reaching their destination, however, their owners, fully alive to the value of a healthy slave, and aware of its contagious properties, appear to have done all in their power to aid their recovery. Since emancipation, less attention has been paid in a systematic way to the Creole population of these islands *quoad* yaws, and regular treatment has been nullified by the prevalent impression among them that it is necessary to pass through the disease, that it is milder if acquired when young, and that native modes of cure are better than those of regular practitioners. Hence cases are concealed, infected areas or huts are not purged from the complaint, and it is thus continuously transmitted. As Dr Nicholls pertinently observes—"The scepticism expressed by Gavin Milroy and others as to the part played by contagion in the development and spread of the malady, and the leaning of a few authorities to the theory that it is identical with or is the outcome of syphilis, may have much to do with the neglect of precautions that sanitary authorities in England would adopt as a matter of course were such a disease to prevail in any urban or rural district." It seems clear that it may be spread both by direct contact or contagion from the sick to the sound, and also by means of mud impregnated with, or flies conveying, the morbific principle, which is associated, according to Dr Nicholls, with a special micrococcus which he found constantly present in the secretions. If Europeans living where yaws is endemic seldom suffer, this is chiefly explicable from their avoidance of opportunities of contagion, and in consequence of their more cleanly personal habits, for instances are related which show that they possess no special immunity. The disease is certainly not a form of syphilis modified in a peculiar manner. Some have classed it as a syphiloid complaint, meaning a disease which, though distinct, presents analogies with syphilis. Nicholls does not, like Numa Rat, describe any primary sore, though he states that a clean unruffled skin surface appears impervious to the virus, and that it is probable that it is propagated only by the direct inoculation of a broken surface. There is a period of incubation lasting in most cases ten to fifteen days, but which may be longer. In it there may be no indications of disturbance of health, or it may be marked by rheumatic pains, elevation of temperature, debility, and constitutional disturbance. Towards the end of this, the skin becomes dry, with light-coloured scaly patches. In these papules develop, rising from the rete Malpighii into and through the horny epidermis. A yellow point appears, a cheesy substance eventually occupying a crater-like depression. Finally granulation tumours arise, of variable size, and covered with firmly adherent crusts. Though these are vascular, they are apparently deficient in nerve filaments, for they occasion little pain, and are not endowed with much sensibility. The soles and palms are at times affected with a chronic dermatitis, somewhat similar to the squamous patches on other parts of the body. The peculiar aspects assumed by the granulomata and squamæ in these latter situations are entirely due to the hypertrophied state of the epidermis produced by walking barefoot. The duration is indefinite, and relapses are frequent, even in those discharged apparently cured, but it is in itself not a disease of much gravity, if the patient be properly treated from the first. Complications with syphilis, with tuberculosis of the skin, taking the form of lupus or the tubercular gumma, or even with leprosy, are not uncommon, and great intensification and aggravation occurs under such circumstances. A true tertiary stage of yaws seems doubtful. This when seen is in most instances due to the results of a syphilitic cachexia. The treatment of yaws does not merely consist, as has been too often believed with disastrous effects, in the administration of mercury and iodide of potassium. The former proves frequently harmful, and only occasionally beneficial. Nor does it do to destroy or interfere with the granulomata in the early stage. These are shown by the pathology of the disease to be consequences of the efforts made by Nature to isolate the infective growths from neighbouring tissues. Relapses are frequent in the practice of such medical men as adopt the plan of acting destructively on the granulomata. In its management cleanliness, baths—especially sea ones—proper hygiene, and good food count for much. In the course of his investigations Dr Nicholls met with a highly contagious skin eruption which has a superficial resemblance to yaws, and which he terms Dermatitis Orientalis. This appears to be a species of very aggravated impetigo contagiosa, in which there is a painful ulcer under the crusts, and which attacks adults more frequently than children. He considers it identical with or closely allied to Bouton de Biskra, Delhi boil, etc.

A Pictorial Atlas of Skin Diseases and Syphilitic Affections, in Photo-Lithochromes, from Models in the Museum of the St Louis Hospital, Paris; with Explanatory Woodcuts and Text. By BESNIER, FOURNIER, HALLOPEAU, TENNESON, DU CASTEL, Physicians to the St Louis Hospital; with the co-operation of H. FEULARD, Curator of the Museum, and Secretary LÉON

JACQUET. Edited and Annotated by J. J. PRINGLE, M.B., F.R.C.P., Assistant Physician to, and Physician to the Department for Diseases of the Skin at, the Middlesex Hospital, London. Part II. London: The Rebman Publishing Company, Limited: 1895.

THE favourable opinion which we expressed as to the merits of the first part of this Atlas is not belied by the contents of the second. Indeed, these are even more interesting and valuable. The first plate is devoted to a typical and representative case of lupus erythematosus. With this before him the merest tyro in medical experience could not fail to recognise an instance, while a study of its features will convey information to many an experienced practitioner. In the letterpress accompanying it M. Hallopeau sustains the tuberculous nature of the disease, though in an attenuated form. The editor, Dr Pringle, in an annotation points out the purely hypothetical character of this opinion. This view of Hallopeau's is not strengthened by the fact that violent local and general reaction occurred when tuberculin was injected; for, as Pringle remarks, to draw conclusions one must have the absence of tubercle elsewhere proved, while other morbid tissues than the tubercular are known similarly to react. In treatment, after enumerating some of the most useful methods, Hallopeau goes on to recommend the injection of the toxin of erysipelas, on the ground that he has seen erythematous lupus cured by attacks of erysipelas. Pringle has also met with two cases in which accidentally contracted erysipelas apparently cured the disease, yet it soon recurred. Yet even this expedient seems to have more in its favour than a further suggestion that trial should be made of the serum of tuberculous dogs, which, proceeding on the above-mentioned assumption, appears a rather hazardous procedure. The second plate represents a remarkable example of hypertrophic rosacea of the forehead, a condition which might easily be confounded with leprosy. We know that a similar case has puzzled experienced physicians. In this picture can be traced all the various stages of the complaint. The letterpress contributed by M. Besnier describes the sequence of phenomena, while the numerous woodcuts rivet attention to the diagnostic points. In the third plate a representation is given of a peculiar circinate syphilitic lesion, one of the most striking of the manifestations of that protean disease. M. Thibierge, in a highly scientific article, traces the phases of evolution of syphilitic patches, and explains the reason why such so often assume the circinate form from the anatomy of the vascular supply of the skin. This, too, has woodcuts depicting other varieties of syphilitic patches, showing the manner in which these arise and the course they pursue. The last plate exhibits xanthoma planum et tuberosum in a glycosuric, icteric, and obese subject. The face and hand are reproduced, and present xanthoma in its most characteristic form. A study of the illustration and the article by Darier relating to it, would incline one to the view that xanthoma planum and xanthoma diabeticorum are the same. Pringle, in an annotation, supports the contrary opinion. The question of identity or non-identity must be regarded as still *sub judice*, as each of these well-qualified observers can offer strong grounds for the position he maintains. In conclusion, one cannot express too much admiration for this beautiful and very inexpensive Atlas.

Transactions of the Dermatological Society of Great Britain and Ireland. Edited by JAMES HERBERT STOWERS, M.D., and ARTHUR MARMADUKE SHIELD, M.B., F.R.C.S. 1894–5. Volume the First. London: H. K. Lewis: 1895.

WE welcome this volume, which will be found to contain much interesting matter. The introductory address by the President, Dr Pye-Smith, is broad, suggestive, and encouraging. The longest articles are those by Bramwell on the thyroid treatment of skin diseases; by Stopford Taylor on the various methods which have been employed in dealing with lupus vulgaris during the last twenty years. From this, useful hints on a difficult subject by a thoroughly practical man will be obtained. There is also a critical paper by Cagney on syringo-myelia and leprosy, in which the views and arguments which have recently been propounded on this question are carefully brought to a focus. Besides these there are short accounts of numerous rare or peculiar cases presented to the Society by different members. Apart from the specialist, the volume possesses many features of interest to the general practitioner, to whose kindly consideration we recommend it.

Clinical Lectures on Diseases of the Nervous System, delivered at the National Hospital for the Paralysed and Epileptic. By W. R. GOWERS, M.D., F.R.S., Physician to the Hospital. London: J. & A. Churchill: 1895.

A THOROUGH knowledge of his subject, great teaching powers, and a beautiful lucidity of style, combine to produce an admirable result, and anything that Dr Gowers writes on a subject which he has made so much his own province is sure to be full of instruction, and will be read with avidity by those of the profession who are not too old to learn. The twenty clinical lectures delivered to post-graduate classes have already, the most of them at least, appeared in various medical journals. Dr Gowers has been well advised to make a book of them, for the value of each is enhanced by the union of all. The first lecture, on the general principles of diagnosis of diseases of the nervous system, opens with a striking sketch of the enormous progress which has been made in the knowledge of the subject during the last quarter of a century. How to examine and how to make a diagnosis are admirably illustrated in the second lecture, which has for its text a case in which the diagnosis was mistaken. Here and there a pungent saying and quotation helps the memory and stimulates thought. Thus, "The teacher's unpardonable sin is to neglect repetition—while the unpardonable sin of the student is to say Yes! when he should say No!" The third, on argyria and syphilis, gives some amusing examples of mistaken drugging. The fourth is a long and very important lecture on syphilitic hemiplegia, affording excellent examples of diagnosis by induction and exclusion. Bulbar paralysis is well described in the fifth, and the various causes and methods of treatment of facial paralysis in the sixth—"Unreasoned conclusions are the bane of students." The contraction after facial palsy which is so apt to cause errors in diagnosis is described in the seventh lecture. A very remarkable case of acute ascending myelitis in a lad following a gonorrhœa is vividly described in the eighth lecture. Locomotor ataxia needs two lectures; would that the treatment of it was as certain as its diagnosis. Drugs seem mostly harmful, and even Dr Gowers can suggest little more than the chloride of aluminium after the usual nerve tonics, arsenic, phosphorus, and strychnia, have been tried and have failed. The meaning of foot-clonus and an account of a case of syringomyelia form the subject of the next two lectures. In the lecture on the treatment of muscular contraction, it is most emphatically taught that tenotomy is *never* needed; "hardly ever" would perhaps be an improvement. The infantile causes of epilepsy are treated of in two lectures. Neuralgia has one interesting in its theoretical but weak on its practical side,—not the fault of the lecturer, but owing to the sad truth that senile neuralgia is one of the *opprobria medicinæ*. Lectures on lead palsy and on optic neuritis conclude this admirably interesting and informing work.

Some Physiological Factors of the Neuroses of Childhood. By B. K. Rachford, M.D., Professor of Physiology and Clinician to the Children's Clinic, Medical College of Ohio, etc. Cincinnati: The Robert Clarke Company: 1895.

This is a neatly got up little book with a very attractive title, but we must confess that we have found its contents rather dull reading.

The author commences with a discussion of the normal functions of nerve cells, and the physiological peculiarities of the nervous system in infants and young children. He next considers the pathology of fever and the explanation of the variable temperature of childhood. Then the blood changes which are important in producing neuroses are passed in review. These are autogenetic and bacterial toxines, a venous condition of the blood, and an impoverishment of it. Dr Rachford is inclined to attribute many of the neuroses of childhood to auto-intoxication, with paraxanthin and other leukomains. The next chapter is on reflex irritation, in which the author strongly believes, and which he discusses in an interesting way. The last is on excessive nerve activity in children, and urges, strongly and sensibly, the physiological importance of the physical as opposed to the mental development of children.

An American Text-Book of Surgery for Practitioners and Students. By CHARLES H. BURNETT, M.D.; PHINEAS S. CONNER, M.D.; FREDERIC S. DENNIS, M.D.; WILLIAM W. KEEN, M.D.; CHARLES B. NANCREDE, M.D.; ROSWELL PARK, M.D.; LEWIS S. PILCHER, M.D.; NICOLAS SENN, M.D.; FRANCIS J. SHEPHERD, M.D.; LEWIS A. STIMSON, M.D.; WILLIAM THOMSON, M.D.; J. COLLINS WARREN, M.D.; and J. WILLIAM WHITE, M.D. Edited by WILLIAM W. KEEN, M.D., LL.D., and J. WILLIAM WHITE, M.D., Ph.D. Second Edition, carefully Revised. Philadelphia: W. B. Saunders: 1895.

THREE years ago[1] we had the pleasure of reviewing in this Journal the first edition of this excellent text-book. We are glad to see that the same thirteen distinguished names still adorn the title-page of the second edition, and that no disaster has followed the ominous number. Many new topics have been added to the text. Among them are the effects of modern small arms in military surgery—acromegaly, operation on the Gasserian ganglion, osteoplastic resection of the skull, new operative procedures in endocranial and spinal surgery, gastrostomy, Murphy's button, castration for enlarged prostate, etc., etc. Some of the hints given in our notice have been attended to, others have been left severely alone. On the whole, we have great pleasure in recommending this text-book as a valuable one for either practitioner or student, containing in one volume most of what is important for the study and practice of surgery.

Aseptic Surgery. By CHARLES BARRETT LOCKWOOD, F.R.C.S., Hunterian Professor, Royal College of Surgeons of England; Assistant Surgeon to St Bartholomew's Hospital; Surgeon to the Great Northern Central Hospital. Edinburgh and London: Young J. Pentland: 1896.

THESE notes were written for the St Bartholomew's Hospital Journal, and are reprinted at the request of friends and pupils. They are arranged under four heads—1. The principles upon which aseptic surgery is founded, including a short account of the commoner bacteria. 2. The distribution of bacteria, with special reference to surgery. 3. The means at our disposal for destroying bacteria and for preventing their growth. 4. The practice of such asepsis at St Bartholomew's Hospital. Well arranged and simply written, these notes have been tested by use at the ward visit and the operating theatre, and thus are much more useful than had they appeared straight from the desk or the laboratory. There is a wise avoidance of undue elaboration, simplicity in method, both in experiment, and practice on the operating table. No student need be puzzled by the theory, and no operators, however experienced, can fail to get a good hint here and there in the details of the technique. The remarks on disinfection of the hands, the preparation of ligatures, and the cleaning of the field of operation, are all valuable and practical.

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[1] *Edin. Med. Journ.*, March 1893.

Leçons de Chirurgie (*La Pitié*, 1893-94.) By Dr Felix Lejars, Professeur agrégé à la Faculté de Médecine de Paris, Chirurgien des Hôpitaux. Paris: G. Masson: 1895.

This volume embraces forty-seven lectures dealing with very various subjects, and many interesting points are raised and discussed in relation to them. Seven lectures are devoted to general pathology, nineteen to surgery of the limbs, three to surgery of the head and neck, three to the digestive tract, seven to the genito-urinary organs, and eight to gynecological surgery.

The lectures appear to us to fulfil admirably the requirements of clinical instruction. The subjects entered upon are important, and though nothing very striking or novel is presented by their publication, yet such a record of an extensive and well-assimilated experience is worthy of attention, and we can cordially congratulate both teacher and students on its excellence. A summary of contents precedes each lecture, and there is a carefully-prepared index.

Gunshot Injuries; their History, Characteristic Features, Complications, and General Treatment. By Surgeon-general Sir T. Longmore, C.B., Q.H.S., F.R.C.S., late Professor of Military Surgery in the Army Medical School, Officer of the Legion of Honour, etc., etc. Second Edition. London: Longmans, Green, & Co.: 1895.

Seventeen years have elapsed since the first edition of this work appeared, and these years have witnessed many and great changes in the mechanism for producing gunshot injuries, and even more in the lines of treatment adopted for their cure. The expression of the matured experience of the late Sir Thomas Longmore cannot fail to advance that department of surgical work to which his life work was devoted, and while especially useful to military surgeons, his book is worthy of the attention of all who may have at times to do with gunshot injuries.

The book is divided into eleven sections, and is in all of these very complete in the information it affords. Sections I. and II. are upon the nature of projectiles and firearms and the qualities and conditions whereby they affect the nature of the resulting wound; Section III. is concerned with the features and signs of gunshot wounds; Sections IV. to VII. with the symptoms, complications, and ulterior consequences; the general treatment in field practice constitutes Section VIII.; army hospital organisation and administration are dealt with in Section IX., and the remaining chapters are concerned with classification and statistical treatment of the injuries sustained in warfare.

While it may be admitted that for surgeons occupied in civil practice Sir T. Longmore's book is too long and enters too much into detail to permit of a complete perusal, yet even on a cursory reading one discovers many points of contact with one's daily surgical experience, and many suggestive questions of surgical pathology are opened up. To military surgeons one would say that such a book must be indispensable.

Handatlas der Anatomie des Menschen in 750 *theils farbigen Abbildungen mit Text.* Bearbeitet von WERNER SPALTEHOLTZ, a.o. Professor an der Universität Leipzig. Erste Abtheilung: Fig. 1-227. Leipzig: S. Hirzel: 1895.

THIS, the first part of a new *Atlas of Human Anatomy,* merits notice on account of the artistic merits and fidelity to nature of the illustrations, almost all of which have been printed by the autotype process. This part contains figures of the bones and some of the joints. In the next part the joints are to be completed, and it will also contain drawings of the muscles, fasciæ, heart, and blood-vessels; while the third and final part will illustrate the anatomy of the brain, nerves, special senses, and development. Each figure is accompanied by a brief description of the structures represented. The language of the text will prevent this work being used to any great extent by students in this country, but it will doubtless attain a well-deserved popularity in Germany.

On Appendicitis, and on Perforation of Gastric and Duodenal Ulcer. By GILBERT BARLING, M.B., B.S. Lond., F.R.C.S., etc. Birmingham: Cornish Brothers: 1895.

MR BARLING has been well advised in publishing his Ingleby Lectures of 1895 in a form more readily accessible to the profession at large. As they have already appeared in the pages of medical journals, we need do no more than again call attention to their excellence and to their commendable brevity. This brevity, however, does not impair their usefulness, and we know no monograph on the subject which may be read with so much benefit and enjoyment.

A Manual of the Practice of Medicine. By GEORGE ROE LOCKWOOD, M.D., Professor of Physic in the Women's Medical College of the New York Infirmary, etc. Philadelphia: W. B. Saunders: 1896.

THIS volume forms one of the publisher's "New Aid Series." In it the author closely follows Osler in his arrangement of the subjects discussed. It is printed in the well-known style of the series, and is illustrated very fairly for a book of its class, the charts being of a very superior type. A manual such as this is better than a compend, much above a volume of examination questions for the cramming of students, but still falls short of the text-book of originality, however brief. For the purpose for which it is intended it will probably suit admirably.

An Essay on Malaria and its Consequences. By R. LINDSAY, A.M., M.B., F.R.C.S.E. London: H. K. Lewis: 1895.

ALTHOUGH Dr Lindsay has a theory of his own which we do not think will meet with wide acceptance in the face of Laveran's observations, yet the book may be read with advantage. The author has had wide experience, and his observations are made with care and discrimination. He seems to think that carbonic acid in excess "extinguishes combustion"; hence the phenomena known as malaria. He thinks that the hydrochloric acid which is used to dissolve quinine is the specific, not the quinine itself, and gives his faith to salts and acids of "haloid origin" as probable antidotes in some part or degree to the poison of malaria.

History of the Cholera Controversy, with Directions for the Treatment of the Disease. By Sir GEORGE JOHNSON, M.D., F.R.C.P., F.R.S. London: J. & A. Churchill: 1896.

IN this *brochure* Sir George Johnson refers to the opinions he has held since 1849 with regard to the treatment of cholera by castor oil, and shows how the most recent ideas as to the pathology of the disease have proved the correctness of his judgment, that opium and astringents were injurious, and that evacuation was indicated. His chapter on treatment is most valuable, and should be read by all who have to deal with this dread disease. Indeed, no one can fail to be instructed, as much which refers to cholera refers also to diarrhœa during an epidemic season.

Parasitism, Organic and Social. By JEAN MASSART and EMILE VANDERVELDE. Translated by WILLIAM MACDONALD; Revised by J. ARTHUR THOMSON. With a Preface by Prof. PATRICK GEDDES. London: Swan Sonnenschein & Co.: 1895.

THE word Parasitism arose in the social world before it came into the organic world—here, indeed, agreeing with more biological ideas than naturalists always recognise. This book, to quote from the preface, "results from collaboration of a specialist in natural science with one in economics. Hence it works out the old idea, not only with modern detail and precision, but upon a higher spiral, comparing the wealth of natural history facts with the wealth of social ones, and thus giving a concrete instance of that practical union and unison of biology and sociology which has been so long proclaimed by the philosophers, but so little carried into practice." The book is suggestive, not exhaustive; the authors have opened the subject, not closed it. It is intended to arouse discussions. It is one which should be read by all philanthropists and economists, and will doubtless interest many members of the medical profession. The four chapters into which the book is divided deal with the various forms of parasitism, the evolution of parasitism, the influence of the parasitic life upon the parasite, and the influence of parasiticism upon the host. The author's conclusions may be perhaps summarized by a quotation of the concluding lines of the book. "The society which is exploited by parasites becomes feeble; the parasitic individuals tend to degenerate. If the society is poorly or defectively organised, there is a free multiplication of the parasitic classes, and the collapse and total ruin of that society soon follows. On the other hand, if the resistance which it offers to exploitation be at all adequate, there will be a speedy elimination of the individuals and classes who become parasitic."

Medical and Surgical Report of the Children's Hospital, 1869-1894. Edited by T. M. ROTCH, M.D., and HERBERT L. BURRELL, M.D. Boston, U.S.A.: Published by the Board of Managers: 1895.

THIS is a most interesting volume, admirably arranged, well printed, and lavishly illustrated; it is quite a model of an hospital report. It begins with an administrative chapter, which includes a history and description of the hospital, its management, its convalescent home, and its schemes of out-door relief. The training of the nurses is well described by the lady superintendent. The second part of the work, or medical division, contains a series of original papers by members of the staff.

The subjects are various, and the papers are delightfully brief and to the point. I. Typhoid Fever. A series of forty-two cases with two deaths are tabulated with much precision by Dr Gordon Morrill. Dr Rotch writes on the value of milk laboratories for hospitals. Dr Blake discusses the relation of an aural service to the needs of a general hospital for children. Dr Buckingham contributes a thoughtful paper on malaria in children, and the late Dr Thomas Sherman describes an epidemic of scarlet fever. Dr Townsend gives his views on the etiology of chorea, which he associates in many cases with severe mental strain at school work; in others, as the result of reflex irritation in eyes, ears, or genital organs. Dr Gordon Morrill relates the value of antitoxin in what he describes as an endemic of diphtheria.

The third and by far the largest division, occupying two-thirds of the whole space, is the surgical. Part I. An instructive table illustrates the relative frequency of surgical diseases, and as usual in children's hospitals, proves the enormous preponderance of diseases of certain bones and joints, such as Pott's curvature of the spine, which furnishes more than 26 per cent. of all the surgical cases, and diseases of hip, ankle and knee, and club-foot and rickets. It then describes generally the work in the wards, the out-patient department, and the surgical appliance shop. The latter department has gradually grown from a small beginning to quite a large department, which is made to so far pay itself by admirable financial arrangements, with which the surgeons have nothing to do. The natural independence and self-help of the American people enable this to be done in a way that we fear could hardly be successfully imitated here amid a lower class pauperized by charity. In Part II. we have an admirable arrangement by which the treatment of certain frequent, and therefore important, surgical maladies is carefully and methodically described and illustrated by reproductions of photographs. The maladies are taken in the order of their frequency,—Pott's disease, hip, knee, ankle, elbow and wrist, club-foot, hernia, and so on. The different writers of each part verify their opinions by their initials, and the result is an admirable one. We can see at a glance what our colleagues are doing for each disease, and we can also see that they are doing admirable work. The mechanical arrangements for spine and hip are simple and efficient. Bowlegs are mostly treated by the osteoclast, and knock-knees below three years of age by splints. Empyæmas are drained and irrigated, with excellent results. Part III. contains six brief signed articles by members of the surgical staff on special subjects of interest. One, "On a Study of Traction in Hip Disease," is very instructive. The brevity and precision of all the teaching in this excellent volume are worthy of all praise.

The London Homœopathic Hospital Reports. Edited by GEORGE BURFORD, M.B., C. KNOX SHAW, and BYRES MOIR, M.D. Vol. IV. London: 1895.

THESE Reports are worth looking through, even if only for the illustration of a case of Bazin's disease, for a more life-like representation of any skin disease we have never yet seen. There is a very good paper, too, on the Clinical Phenomena of Appendicitis, with three successful cases in which the surgeon was called in. In a preliminary puff of the New London Homœopathic Hospital by Mr A. C. Clifton, practitioners of ordinary medicine are termed orthodox. Is homœopathy, therefore, heterodox? And, again, "dull and prejudiced Philistines," especially those in the provinces. It is ever so. To every faddist the majority are Philistines. To the orthodox the treatment, as stated in the volume before us, will be the only drawback to the enjoyment of reading some cleverly expressed and observant papers, for the drugs and the symbols used are not too clear to any one not a homœopathist. A study of a drug called anacardium is to our minds somewhat peculiar. Because it causes a patient to smell chicken or pigeon dung when smelling his clothes or body, it is strongly indicated in cases of abnormal smell of neurotic origin. Because it brings on mental confusion after transient exhilaration, it should be given even in the twelfth dilution to mental cases, especially if delusions or confusion are present. And so on throughout the whole gamut. Truly a wonderful remedy.

Part Third.

MEETINGS OF SOCIETIES.

MEDICO-CHIRURGICAL SOCIETY OF EDINBURGH.

SESSION LXXV.—MEETING V.

Wednesday, February 5, 1896.—Dr ARGYLL ROBERTSON, *President, in the Chair.*

I. ELECTION OF MEMBERS.

THE following gentlemen were elected Ordinary Members of the Society:—J. Cormack Smith, M.B. C.M., 9 Brunton Place, and R. D. Clarkson, M.B. C.M., 20 Graham's Road, Falkirk.

II. EXHIBITION OF PATIENT.

Mr Cotterill showed a patient who exhibited a well-marked example of a disease which was not very common, and which was of considerable importance, in so far as it was apt to lead to something more serious later on in a number of cases,—leucoplakia, also called ichthyosis of the tongue, or superficial glossitis. Its importance lay in the fact that in many cases it was followed by epithelioma,—not, it appeared, by any direct transformation, but from its being very often associated with fissures and cracks which might take on malignant character. As to the pathology of the condition, it was thought by most authorities to be due to a combination of tobacco and syphilis. He had not been able to elicit any syphilitic history in this case. There was ulceration in the middle of the tongue. When there was a specific history, one might expect a somewhat better result from iodide. He had been giving it for three or four days. The usual treatment was by iodide of potash and local mercurial lotions, bicarbonate of soda to clean away the epithelium, and painting with chromic acid and things of that kind. But it was admitted on all hands that the treatment was very inefficacious. It was of importance to the general practitioner to recognise this condition, because Mr Cotterill could not help thinking it would have a very important bearing on the question of life insurance. There were many grades of the disease less severe than that seen in this patient. The case was under treatment, and in a few weeks Mr Cotterill might have an opportunity of showing him again.

III. Exhibition of Specimen.

Mr Cotterill showed an epithelioma of the larynx which he had removed in hospital that day. The patient had been sent to Dr M'Bride, who reported that the right cord was immobile. Mr Cotterill did a preliminary tracheotomy, and put in a large tracheotomy-tube a few days ago, and went on to the second half of the operation that day. On splitting the thyroid he found the vocal cords healthy, though the right cord was fixed, but on passing his finger up towards the mouth he felt on one side a considerable amount of thickening. He split the parts right up to the chin, dividing the hyoid bone in the middle line, and separating the soft parts at the back of the larynx, and pulling them up as well as he could from the pharyngeal wall, turned aside the sterno-hyoid and sterno-thyroid muscles, got to the back of the disease after a somewhat deep dissection, and got it all removed, as far as he could tell. A large part of the pharyngeal wall had to be removed along with it.

IV. Exhibition of Photographs.

Dr Dawson Turner showed, by means of the lantern, a series of photographs taken by the Röntgen process. He said that he never knew whether he was going to have a successful negative or not. He might take one photograph, and it would come out pretty well, and then take another, when he would sometimes get no effect at all upon the negative. He was entirely in the dark at present as to what the rays were which affected the negative plate, how they were to be concentrated, or best directed on the plate. From the experiments he had made he was led to the belief that the rays could be reflected, contrary to the supposition of some, who held that they could not be reflected, polarised, or deflected by the negative, etc., and therefore were not rays of light. He had found the rays act only at very short distances. If the plate were more than a yard, or even 1½ foot or so from the vacuum tube, there was no effect. An ordinary exposure was thirty minutes. He could not understand how some could take photographs in four minutes. He had taken one that day in a quarter of an hour, and it was not very well marked. The thickest part of the body he had so far been able to go through was the wrist. This negative showed pretty well the radius, ulna, and some of the carpal bones. The cuneiform was apparently not in its expected position. He had shown the photograph to Sir William Turner, who at once remarked on the absence or diplacement of the cuneiform. If the process could be applied to the thicker parts, no doubt many points of anatomy would be cleared up, such as the position of the patella in flexions of the knee-joint. The successful photographs of human anatomy he had as yet taken were those of foot, hand, and wrist. He would now show several photographs on the screen,—first one of the foot, and one of the hand, in which the skeleton came out distinctly. The interarticular intervals showed well the transparency of the articular cartilage to the rays. The medullary cavity of some of the bones could also be seen in a fainter tint. Thickenings of the plantar epidermis came out darker than the surrounding parts. The terminal phalanx of the little toe, they would observe, was turned directly inwards, and he was inclined to regard that as its normal position. He next showed a photograph of a pencil-case and half-opened knife. These had simply been placed against the wooden shutter of the camera, through which the rays passed easily. Next a purse with two metallic clasps, an outer and an inner, containing a florin and key. The metallic structures came out dark, the rest of the purse hardly appearing at all; next three cigars in an aluminium cigar-case. The cigars, each with its paper band, came out clearly, and even the manner in which they were rolled was in some degree visible. There was also a faint dark zone indicating the elastic band with which he had fastened the case to the shutter. He next showed a photograph of a lady's hand with ring on finger; also one of the wrist in position of supination, showing the styloid process of the ulna lying dorsal, and even a little external; next one of coins in a purse; next of a key, pen-nib, and various other articles; also one of a frog, taken by Mr Campbell Swinton of London, in which the limb bones came out distinctly. He had himself taken one of a fish, in which the stomach, owing evidently to its containing something solid, had come out distinctly. He also showed one of a razor in its case, taken by Mr Swinton.

The President said that they were all obliged to Dr Dawson Turner for his demonstration of this new invention, which might become important in the near future, since it might enable them to see parts in the interior of the body, and obtain distinct traces of foreign objects there, being more or less of an endoscope. It might give them a more accurate and clearer idea of the position of parts in the interior of the body.

V. Original Communications.

1. *Dr Byrom Bramwell* read his paper on a CASE OF CALCAREOUS DEGENERATION OF THE HEART AND ARTERIES, WITH RAPIDLY

DEVELOPED SUBCUTANEOUS TUMOURS in the axillæ, elbows, groins, natal folds, and popliteal spaces, and symptoms suggestive of Addison's disease, in a young man aged 25 affected with advanced cirrhosis of the left kidney; the right kidney having been completely destroyed fourteen years ago by a pyelo-nephritis; with Pathological Report by Dr Lovell Gulland.

The President said they would be glad to hear any remarks of members present on this very curious and interesting case that had been so vividly depicted by Dr Bramwell.

Dr Russell, in response to the President's invitation, said that he was sure they had all followed with deepest interest the record of this extraordinary case. He no more than Dr Bramwell had ever seen a case at all like it. Of course it had bearings on other cases. Extensive calcareous degeneration and infiltration occurring along with kidney lesion was met with from time to time in aged persons. He had himself, like Dr Bramwell, met with this extensive calcareous affection of arteries, with accompanying advanced renal cirrhosis, but always in old people. The special feature in this case was its occurrence at this very early period of life. As to the possibility of such occurrence, he had a case at the Infirmary "out patients" last Tuesday, a man of 33, with abdominal aneurism, and very markedly thickened and somewhat calcareous vessels. He had been operated on some years previously for aneurism of the popliteal artery. He had recovered, and now turned up with aneurism of the abdominal aorta, and this very marked condition of his arteries. That, of course, was the kind of case that was recalled to one by this of Dr Bramwell's. He knew that a calcareous condition of the heart did occur, but he had not met with any case of such extensive incrustation as evidently existed here, extending even to the endocardium of the left ventricle. He had not heard of anything at all approaching such a condition as that. The condition of the skin was also very curious, and he thought that Dr Bramwell's interpretation of the changes there was correct. The appearances to the naked eye were evidently those of a fibrous hyperplasia, which were exceedingly suggestive of a malignant process affecting the cutis vera, extending into the subcutaneous tissues and surrounding individual fat lobules. One could make out with the naked eye in various parts of this fibrous tissue areas of calcification which, he presumed, originated, as Dr Bramwell had suggested, around individual vessels. Whether the extensive fibrosis was really due to calcareous infiltration or not was a point which might be questioned, and yet it was exceedingly difficult to account for it on any other hypothesis. That in the main Dr Bramwell's conclusions were supported by the facts he thought none of them could doubt, and that the incompetence produced in the kidney led to this extraordinary accumulation of lime salts which were deposited in the arteries and also at certain parts in the subcutaneous tissues, leading in the latter to thickening and tumour-like growths. As one of the physicians present, he fancied he might assure Dr Bramwell that they were, as a Society, very much indebted to him for bringing before them a case of such very great interest, a case which he thought would prove practically unique when put on record.

Dr Young said that he could not but associate this case in his mind with a case which he once saw, in which not the arteries but the muscles were affected with calcareous deposition in early life—he referred to myositis ossificans. He had mentioned the case to the Society when a paper was read by Prof. Annandale on wry-neck. It was that of a little girl of 6 or 7 years. He only saw her once, and did not take her address, so that he was unable to show her to the Society. It was an extreme case of what Rindfleisch had called myositis ossificans; in fact, the sterno-mastoids were quite rigid calcareous rods, and the pectorals were also affected. It was a good many years since he had seen her. He cited the case in illustration of the tendency, even in early life, to the deposit of calcareous matter.

Dr Foulis said that he rose to direct attention to a very important matter that had been partly alluded to by Dr Bramwell,—the connexion between kidney disease and the deposition of lime salts. No doubt, as Dr Russell had already emphasized, they saw calcareous degeneration very frequently in old people, and it was extremely common to find, in this cirrhotic degeneration of the kidney, advanced calcareous degeneration of the arteries, and perhaps of the rings surrounding the pulmonary and aortic orifices of the heart. He could recall a case in which Dr Bramwell performed the post-mortem, and found most marked calcareous degeneration of the large bloodvessels, aortic valves, and rings at orifices of heart in an old lady. In recent times he had frequently seen cases of marked calcareous degeneration in old people, but invariably most marked in those cases in which kidney degeneration was most prominent, and in these cases the prominent pathological feature was the extremely arenal condition of the individual. It would be well to emphasize this as probably accounting for the general calcareous condition, *i.e.*, the failure of the essential organ of elimination. He thought Dr Bramwell had shown that this man was practically an arenal individual; and how he could have lived for so many years without showing symptoms he could not understand.

Dr Armour said he would just like to ask Dr Bramwell if he could explain why in this case the man did not present symptoms of the absence of excretion of urea? Such kidneys as these suggested to one that they had hardly any function whatever.

Dr Bramwell, in reply, said that he was very much obliged to Dr Robertson and Dr Russell for their remarks. With regard to the question of urea, the man was passing three pints of urine daily, and he must have been excreting much more urea than they would think possible. That was just one of the points of clinical interest in the case that it was so difficult to explain. He could give no explanation, could merely state the fact that it occurred, and that there were no symptoms of uræmic poisoning. As to the interesting condition referred to by Dr Young, he had never had an opportunity of seeing it, but no doubt it had a relation to the present case. Of course, as Dr Foulis had said, one saw the condition in advanced life; but in some that he had seen there was no evidence of cirrhotic kidney at all. When he first went into practice he saw an old gentleman with every artery in the body calcareous, who lived for many years. He remembered Dr George Murray of Newcastle remarking, on seeing the patient, that he ought to be bottled as a whole and put in a museum. That was one of the cases without any marked cirrhotic condition.

2. *Dr Lockhart Gillespie* said that he did not intend to read his paper, on THE WEATHER, INFLUENZA, AND DISEASE FROM THE INFIRMARY RECORDS, in full, but would call the Society's attention to one or two of its main points. He had divided it into four parts, the first of which dealt simply with the data on which he based his conclusions. He had taken the last seven years' admissions into the medical wards, numbering 27,569 cases. He had divided these according to the system affected, and also according to the number of admissions during each week for the different years. He first investigated the admissions of the different classes of disease in connexion with weather. With regard to weather, he had looked into, more particularly, two of the elements—the element of type, *i.e.*, whether it was cyclonic or anticyclonic; and, instead of taking the mean temperature, since he did not think health was affected so much by mean temperature as by the variations, he had taken the extremes in each week, *i.e.*, weeks in which temperature did not rise above 60°, and weeks in which it did. This divided the year very fairly. With regard to the type, he found that during the seven years, for 30·5 weeks in each year the prevalent type was cyclonic, for 21·5 anticyclonic. The warm weeks were to cold as 29 to 22, roughly. The first thing he noticed with regard to the type was that for three of these seven years cyclonic weather was markedly in excess. The years he had taken were from 1st October 1888 to 1st October 1895, and it was in the second, fourth, and sixth of these years that the cyclonic element was most marked. Respiratory cases were admitted in larger numbers during these three years, and the weekly admissions of respiratory cases during the cyclonic weather were much in excess of the admissions during the weeks in which anticyclonic conditions prevailed, while in the other four years the exact opposite occurred, viz., respiratory cases smaller in total number, and also smaller in proportion to total

admissions during the cyclonic weeks, compared with those admitted during the anticyclonic. He could not find the same relation between the temperatures. He had tables, which he would pass round, showing some of the points. It was especially noteworthy that while respiratory cases were most abundant during cyclonic weather and when the maximum temperature was below 60°, cases of pneumonia were admitted in much greater number during anticyclonic weather, and were only slightly increased when the temperature fell below 60°—*i.e.*, pneumonia, being an infective disease, was not so much affected by the temperature as ordinary respiratory cases. Pleurisy corresponded with other respiratory disorders. Cardiac disease was more rife in cyclonic and in warm weather; kidney disease also in cyclonic weather. Rheumatism underwent a very great increase indeed in anticyclonic weather, and also when the temperature was low. The others he hardly needed to mention, except that the digestive system was more affected in anticyclonic weather, when the barometer was high and the weather dry. The tables explained themselves. On going over these figures he found that the incidence of influenza during the years in which he worked at the records altered the results so markedly that he had included a note on influenza, which had rather exceeded in size the original work. He showed a chart which contained a considerable number of entries. The seven years were shown, each divided into weeks. He had indicated by a red line the absolute number of respiratory cases admitted each week. He had also taken the average of every five successive weeks, and by noting it on the chart had obtained a smoothed curve. Below were the actual number of cases admitted each week into the medical wards with influenza. It was at once apparent that there had been an epidemic in the winter of 1889-90, a small epidemic in the spring of 1891, a great epidemic in the winter of 1891-92, a very small epidemic in the spring of 1893, a considerable epidemic in the winter of 1893-94, a well-marked epidemic in the spring of 1895—*i.e.*, six epidemics in six years; and if they counted up the weeks, they found sixty-eight weeks in six years, or one in every four and a half. He had, by the kindness of Dr Douglas, obtained a record of the number of cases of influenza from the Post Office, and the Post Office curves corresponded with the Infirmary curves. In the first epidemic the percentage of postmen affected was 6·5 per cent.; in the second, 3·5 per cent.; in the third attack, 13·9 per cent.; in the fourth, 1·5 per cent.; in the fifth, 11·6 per cent.; and 7·4 per cent. in the last epidemic—*i.e.*, a mean percentage of 7·9 of the whole Post Office in the six attacks. Another line on the chart showed the weekly type of weather, red for cyclonic, blue for anticyclonic. The next line indicated temperature, blue for under 60°, red for over 60°. Cardiac cases were also " Bloxomed " by fives, as were rheumatic and nervous cases. The total admissions were also " Bloxomed " to get a smoothed-out curve. After an epidemic of influenza one noted an increase of cardiac cases two or three months after the attack. He showed a small diagram in which each of the lines indicated the average normal percentage in relation to the total admissions into the medical wards. Red indicated the percentage below and above normal during each attack, and blue the percentage above or below normal to the total admissions after each attack. Cardiac and nervous cases were above the average after each attack of influenza. With regard to weather conditions, the normal was thirty cyclonic weeks to twenty-two anti-cyclonic annually; but if they took the conditions that occurred before, during, and after the epidemics, they found the following striking facts brought out:—He had taken the six weeks preceding each of these epidemics, thirty-six weeks in all. Taking the normal mean for these, they found cyclonic twenty-six, anticyclonic ten. For these weeks, however, the actual figures were, cyclonic thirty-one, anticyclonic five, *i.e.*, an immense increase of cyclonic weather before each attack of influenza. The first two weeks of each attack, or twelve weeks in all, were three cyclonic to nine anticyclonic in type, while the normal average for these weeks was actually the opposite, nine to three. Influenza was preceded by cyclonic weather, and commenced in dry anticyclonic weather. Before each attack they found the rainfall above normal and temperature below normal. In the first two weeks of the epidemics the rainfall was small, almost *nil*, and the temperature also low; but during the whole sixty-eight weeks of the epidemics the temperature had been normal, and the rainfall practically normal. For the four weeks following the epidemics the rainfall was above normal, *i.e.*, the six epidemics in Edinburgh had been preceded by wet stormy weather of predominantly cyclonic type, had begun in dry, cold weather of predominantly anticyclonic type, had continued during normal weather, and had subsided in weather with temperature rather above the normal for the periods in the seven years, and the rainfall very much above normal. He had many more facts which he would not trouble them with. He had taken statistics of the last four epidemics that occurred some years ago in the Infirmary. From the Infirmary records he found clear evidence of an epidemic of influenza in the winter of 1848-49, in February to May 1851, in January to April 1855, in October to February 1857-58. The charts which he had made out would show how influenza affected the Infirmary then. The most extraordinary epidemic of all was that of 1848-49, when the number of cases rose in one week to 39 per cent. of the total admissions, excluding fever cases, for which there was not then a special hospital. There was no very marked increase in the respiratory cases admitted. Out of the whole ten epidemics it was only in that of 1848-49 that the respiratory cases were not increased. A large number of digestive cases were admitted during the course of the epidemic. He regretted that owing to the late hour he could not go more fully into the subject at present.

The President said that they had all listened with great interest to Dr Gillespie's paper. It was a very wide subject which he had tackled,—viz., the interaction between climatic conditions and disease. They trusted this was only a sample of the results which he would get from such investigations, more particularly if he could throw light on the causation of influenza, that extremely obscure and many-sided disease. He had referred in his paper to the epidemic of 1848-49. He (Dr Robertson) could bring quite clearly to his recollection that epidemic, and the consternation that prevailed in Edinburgh at that time in consequence of the occurrence of that unknown disease. The term influenza was then brought prominently forward, and the disease was viewed with great alarm by all the inhabitants of the town.

Dr Craig said that he would just like to ask one question. Had they conclusive evidence that the epidemic of 1848-49 was precisely of the same kind as the disease with which they were more familiar as having occurred during recent years, because the name influenza was rather widely used at one time.

Dr Black said that this was a very interesting subject. Having had some experience in hygiene, he had taken great interest in this paper. It seemed to have involved a great deal of work, collecting statistics, drawing conclusions, diagrams, and averages, and had occupied time quite out of proportion to the space given it that evening. Without entering into the details of the various diagrams and tables, he might state that from the hygienic or sanitary point of view it was less important than from the meteorological point of view. They could all recognise that the human frame was made for a variety of climates; that man travels from the north to the south pole through various climates both on sea and land without great deterioration of constitution; further, that the barometer may be high or low, and the altitude might vary from Alpine resorts to the seaside, yet the constitution tolerated them equally well. But they must discriminate between weather and climate. The seaman came through cyclones, typhoons, and the tropics, and was none the worse. If they regarded bad weather as injurious to the human frame, how could they get a reduction of mortality in town or country? If they could not improve the weather, they could not lessen the mortality. The same weather had endured in England for 1000 years, but they had reduced the mortality considerably—from 30 to 40 per thousand in cities to 15 or 20—so that there was something beyond weather that produced disease. There were the various germs, bacilli, and effluvia floating about in the atmosphere, coming and going according to laws not yet perfectly understood. The meteorological view of disease might afford useful employment to those interested in it, but it did not bear so much on the hygienic aspect of the case as was generally supposed. There was one point on which he congratulated Dr Gillespie, viz., on his having made a good name for anticyclonic weather. During the present year they had had a great deal of it, and should therefore all be in a healthy state. He congratulated them on the fact that this weather would probably continue, and would enable them to get through the rest of the winter with improved health, and be ready for the excursions and festivities of spring.

Dr Gillespie, in reply, said that he had two questions to answer. Dr Craig had asked as to the type of disease in 1848. It was rather extraordinary that if they took the percentage of respiratory cases to the total admissions, it worked out exactly the same in the earlier as in the later epidemics, that figure being very much over the normal for the whole period. The pneumonia percentage during these attacks was exactly the same as during the last series; and so on, all the way through, they found that its effect upon disease in the four previous epidemics had been almost identically the same as in the later. He did not say that the weather caused the influenza; he merely said that it facilitated its spread. If influenza was present, it got a start when the weather changed; and once it had started in epidemic form, it did not matter what sort of weather came on afterwards. It might be hot or cold, the epidemic went on until there was a plentiful downpour of rain.

OBSTETRICAL SOCIETY OF EDINBURGH.

SESSION LVII.—MEETING IV.

(*Extra Meeting held at Surgeons' Hall*).

Wednesday, 29*th January* 1896.—Prof. SIMPSON, *Vice-President, in the Chair.*

I. *Dr Struthers Stewart* showed some Views, illustrating ENDOMETRIC CONDITIONS, by means of the electric-arc lantern.

II. *Dr Berry Hart* showed Microscopic Sections of EPITHELIOMA VULVÆ, FIBROMA VULVÆ, AND FIBROMA VAGINÆ.

III. *Dr Berry Hart* read a paper, illustrated by Views shewn by the electric lantern, ON THE USE OF PLASTER MOULDS AS A BASIS FOR MODELS IN GYNÆCOLOGY AND OBSTETRICS.

Prof. Simpson (Vice-President) expressed the thanks of the Society to Dr Hart for the great treat he had afforded the Fellows in the very interesting and suggestive demonstrations with which he had favoured them. It must have cost him a large expenditure of time and thought to prepare the casts and slides and provide for the beautiful lantern exhibition; and his clear exposition of the various objects had made them feel that the meeting had been not only profitable but extremely pleasant. Teaching by means of plaster moulds might not be original, but at least Dr Hart had shown its application in some new directions, and they could understand his success as a teacher when they saw the ingenuity which had enabled him to demonstrate what it is so difficult intelligibly to describe, the stages and the technique of a perineoplastic operation.

IV. *Dr Berry Hart* read a paper on the SERIAL SECTIONAL ANATOMY OF THE EARLY FŒTAL PELVIS, WITH SPECIAL REFERENCE TO THE DEVELOPMENT OF THE CLITORIS, VAGINA, AND HYMEN.

Prof. Simpson said that the embryological researches were of the deepest interest, and threw quite a new light on the development of the vagina and vulva. That Dr Hart had been absolutely correct in his interpretation of the changes he had described would, of course, need fuller confirmation by further examination of other embryœs and fœtuses; but there was an air of verisimilitude in the demonstrations they had witnessed which must have made all feel that he was on the track of an important discovery. Dr Hart had found confirmation of his views in the presence of the hymen in cases where the vagina was completely atresic. He (the Chairman) would suggest that a study of the relations of the hymen in cases of duplicity of the vagina might give further important light on the subject.

Dr J. W. Ballantyne agreed with Prof. Simpson as to the special value and interest of the demonstration which Dr Hart had given. Even the best text-books on embryology gave a very uncertain sound on many of the points which Dr Hart had so clearly and ably demonstrated. As to the question whether or not the epiblastic Wolffian ducts and bulbs entered into the formation of the lining of the vagina and the hymen, he (Dr Ballantyne) felt that it was safe to leave it to the embryologists to thrash out; but whether or not there was agreement on this point, there could be no doubt that Dr Hart's theory formed a splendid working hypothesis to explain the mode of origin of some of the most puzzling anomalies and malformations of the external genital organs in the female. After all, this fact should go a long way in itself to support the theory, for it had over and over again been found that the study of malformations threw much light on normal development, and the theory which best explained the anomalous cases was probably also the most nearly correct as regarded the normal. Dr Hart's views were especially interesting in their bearing upon so-called imperforate hymen, and he (Dr Ballantyne) believed that most of the cases regarded and reported as hymeneal imperforation were really instances of imperforation of the lower ends of Müller's ducts, the hymen being present, but overlooked on account of the projecting Müllerian pouch. It would be of interest, and might prove or disprove Dr Hart's theory of origin of the vaginal lining membrane, if the nature of this epithelial lining in a purely Müllerian vagina could be microscopically determined. He thought also that this evening's demonstration might throw light upon the nature and mode of origin of vaginal and hymeneal cysts. There was to him one difficulty in regarding the Wolffian bulbs as the anlaogue of the hymen and vaginal lining — viz., the cases in which the Wolffian ducts were regarded as permanently present in the form of Gartner's ducts or Skene's tubules, and in which the hymen and vagina were yet normally formed. He had hoped that Dr Hart would have thrown some light upon the question of the primary double character of the clitoris; he had recently met with a case of split clitoris and another of double penis, and had been much impressed with the idea that probably both these homologous organs were primarily double, but the embryological text-books gave no hint as to any such possibility. Yet in some of the lower animals—the reptilia and crocodilia for instance—the penis was either double or bifid; and it seemed to him as very probable that it would yet be found that in its earliest manifestations the sexually indifferent genital eminence might show signs of duplicity. In conclusion he thanked Dr Hart for his extremely profitable and suggestive demonstration.

Dr Berry Hart, in reply, thanked the Fellows for their kind and suggestive criticisms.

SESSION LVII.—MEETING V.

Wednesday, 12th February 1896.—Dr A. BALLANTYNE, *President, in the Chair.*

I. The following gentlemen were admitted Ordinary Fellows of the Society:—John Cumming, L.R.C.P. & S.E., 94 Gilmore Place, and S. J. Aarons, M.B. C.M., Australasian Club.

II. *Dr Haultain* showed a specimen of a MISSED ABORTION. The patient from whom the specimen was procured last menstruated in the first week of June. The symptoms of pregnancy were well marked till the middle of October, after which time the abdomen decreased in size and the breasts became flabby. She was seen in November and the condition then recognised, but interference was not advised. He again saw her in January, but as no inconvenience was complained of, he again refrained from interfering. On February 8 spontaneous expulsion of the fœtus in its amniotic sac occurred, but the placenta was retained. Its detachment was most difficult, and was associated with alarming hæmorrhage. The specimen on examination was of interest: it showed a four months' fœtus in its amniotic sac. The placenta was vascularized, but extremely fatty, and the fœtal surface was covered with dark tuberous masses, indicative of Deciduitis Polyposa. The case was clinically interesting, as at least supporting the expectant treatment of those cases where no active symptoms are present. Had artificial dilatation of the cervix for the emptying of the uterus been adopted, the separation of the adherent placenta would probably have been more difficult, and the blood loss correspondingly more severe. The specimen also demonstrated that although growth of the ovum ceased $4\frac{1}{2}$ months before expulsion, the uterine attachment remained firm and vascularized, the conditions being identical with those met with in the so-called carneous mole, the only difference being the fuller development of the ovum before cessation of growth took place.

III. *Dr Milne Murray* showed two MALE OSTEOMALACIC PELVES.

IV. *Dr James Ritchie* read a paper on A CASE OF OSTEOMALACIA CURED BY OÖPHORECTOMY, with a discussion of the Ætiology and Treatment of this disease.

Prof. Simpson said this was one of the most interesting papers that had been communicated to the Society for many years. It was interesting, first of all, because of the rarity of the disease with which it dealt. The rarity was so great in Edinburgh that he (Prof. Simpson) had never seen a case of labour in a patient with an osteomalacic pelvis, and besides the two cases which he had seen in consultation with Dr Ritchie, he had only seen one other patient with this disease. In her the condition that led her to seek advice was the difficulty of coition, induced by the narrowing of the pubic arch from approximation of the rami of the ischium and pubis. As to the case which Dr Ritchie had recorded so carefully, the condition had been accurately recognised, and when he (Prof. Simpson) saw it he could only confirm, by the internal examination, the diagnosis Dr Ritchie had already made, and agree to carry out his suggestion to attempt the cure by double oöphorectomy. But Dr Ritchie's paper was of great value, further, because of the zeal with which he had taken up the study of the subject, so that he had been able to favour the Society with a communication which would form a landmark in the subject in Anglo-Saxon literature. So far as he (Prof. Simpson) was aware, we had nothing so complete in the way of sifting of the now extensive literature in the English language as was to be found in this paper, which was, moreover, valuable because of the acute discussion of the pathology, symptoms, and treatment of malacosteon. With regard to the ætiology, there was still much that was obscure; but in all probability Dr Ritchie was on the right lines in insisting on the importance of the influence of the nervous system in the development of the mischief. It was very striking to note how soon after the operation the patient began to experience relief from her pains, long before there was time for any change to have occurred in the skeleton.

Dr Barbour thought the paper was of very great value, and raised many points of interest. As to the cause of the condition, many observers had drawn attention to the increase of phosphoric acid in the urine, during at any rate the earlier stages of osteomalacia,—that is, while the disease was progressing. But few observations gave satisfactory data, because to get at an exact result we must know also the quantity secreted in the fæces and the quantity supplied in the food. Neumann had made such a thorough investigation on a case of osteomalacia during the puerperium. The observation was made for a consecutive week, the composition of the milk and soup being analyzed, as also the fæces and urine. Examination had been made of two periods—the first, seven weeks after delivery, while the disease was still advancing, the patient having pain in all her limbs and unable to move. The ilia were distinctly flexible, but the other bones were not so. The second observation had been made a month later, when the patient was able to move about. The excretion of phosphoric acid was for the urine 3·7 per diem, as against 3·5 for the healthy adult; for fæces and urine there was a total excretion for the week of 43·4 grains, as against 28·7 taken in the food, so that the waste of bone tissue must have supplied the difference of 15·1. In the second period the secretion in the urine fell to a half (1·8 as against 3·7), while the total excretion fell to 15·4, although the amount taken in the food was practically the same (29·9). That is to say, there was now a retention of 14·7 in the system, as against the loss of 15·1 in the former period, making a total difference of 29·9. As to Dr Ritchie's explanation of the changes in the bone being due to a lesion of the spinal cord, it was difficult to harmonize this with the rapid improvement after operation. In the reports of cases it was remarkable to notice how pains that had existed for some months ceased a few days after operation, while in a week or two the patients were able to move in bed and then to stand or walk. He thought this rapid improvement was inconsistent with any lesion in the nerve cells of the cord, though not with trophic changes produced reflexly.

Dr Underhill thought that the Society and Dr Ritchie were to be congratulated on this excellent paper,—the most complete view and discussion of the subject in the English language. The disease was rare in this country, and he had not seen, or at all events had not diagnosed, one before delivery. The most interesting point was that of ætiology. It was clear that as the disease occurred in men as well as in women, there must be some other cause for it than ovarian irritation, as it did not seem to have been shown that there was any corresponding irritation in the male generative organs. He was reminded by Dr Murray of a case which occurred in Maternity where the uterus was ruptured, and the patient was treated by laparotomy and removal of the uterus and appendages, and recovered. In that case they found the pelvis beaked, but not much deformed, the general health broken down, and the tissues soft at the time of operation, and he had now no doubt that she was suffering from osteomalacia. This case went to prove the truth of Dr Ritchie's paper, because after her recovery the woman regained health and strength and youth in a very remarkable manner. The case was reported to the Society at the time, and published in the *Transactions*.

Dr Church thought that the fact of some cases of osteomalacia having been much improved by inhalations of chloroform gave support to the theory that the disease was due to the influence of micro-organisms. Chloroform being a germicide, and, on account of its rapidly diffusive power, getting easily into the blood, is most likely to act beneficially where organisms and their products are the cause of disease. *Apropos* of this subject, he mentioned the case of a little boy who suffered from some septic disturbance, with high temperature, for about three months, and who, after deep narcosis with chloroform, at once improved, and had no return of the symptoms. Also the case of a lady with acute peritonitis from septic causes, in whom chloroform inhalations had been kept up all night, and who apparently owed her life to that treatment. In osteomalacia due to organisms it was therefore reasonable to expect improvement from chloroform.

Dr James Ritchie said, in reply to Dr Barbour, that it seemed to him that the rapid improvement after operation showed that the disease was due to some influence from the central nervous system, and not to some zymotic or other general condition. The beneficial result, in a large number of cases, from the removal of the ovaries proved that they excited a powerful reflex influence through the cells of the cord, but the fact that the disease persisted in a proportion of cases after double oöphorectomy showed that the cause originating the disease must be located in the cells of the cord. The lesion could not be, as Dr Barbour justly remarked, a serious organic change ; probably it was lowered vitality with increased irritability In relation to the remarks of Dr Underhill and Dr Milne Murray, friability of the pelvic tissues had been frequently noted. Fehling in some cases had difficulty in ligaturing the ovaries because of this friability.

V. *Dr Barbour* read a paper on ULCUS SERPIGINOSUM OF THE VULVA, illustrated by Microscopic Sections.

Dr Norman Walker said the case was most interesting. The cases of Matthews Duncan and Angus Macdonald were alluded to in most works on dermatology, usually as instances of mistaken diagnosis. Lupus he was able to exclude whenever he saw the case, which he thought was probably of the rodent ulcer type, though not exactly like that condition as it occurred in other regions. Under the microscope it could not be identified with any growth with which he was familiar. Syphilis, which its localization round the vessels indicated, was excluded, for as Unna, to whom he sent some sections for opinion, pointed out, there were no signs of degeneration, which in such a long-standing case could not have been absent. Although he was unable to demonstrate the bacilli in every section, he was inclined to agree with Dr Barbour in the diagnosis of ulcus serpiginosum, and to attribute the absence of bacilli to faulty methods. He thought Dr Barbour had not made it sufficiently clear that Unna's ulcus serpiginosum was closely allied to the soft chancre. The history of the case was distinctly suggestive. He thought that if gynæcologists knowingly used the term " lupus " to all sorts of ulcerative processes, whether tubercular or not, the sooner they stopped doing so the better.

VI. *Dr Barbour* read a paper on BRAUNE'S OS INTERNUM AND THE RETRACTION RING, illustrated by a series of interesting Micro-photographs.

ROYAL MEDICAL SOCIETY.

Jan. 17.—Dr Simson in the Chair.

Dr John Orr showed a little girl with Facial Herpes, extending over part of the area of distribution of the right infra-orbital nerve; also a boy, aged 15, on whom he had successfully operated for Appendicitic Abscess.

Drs Yeoman, Bowes, and *Waterston,* and *Messrs Ritchie, Fleming,* and *Blaikie* spoke.

Dr Bowes showed two specimens:—1. A Malignant Stricture of the Lower End of the Œsophagus from a man aged 62, who had suffered for fourteen months. A bougie on being passed met with resistance 7 inches from the teeth at the level of the cricoid, and again 13 inches from the teeth. No bleeding occurred. Passage of fluid down the gullet could be auscultated down to the level of the seventh dorsal spine. The fluid took seven or eight seconds to reach the stomach. Post-mortem there was found an epithelioma of the œsophagus, 1½ inch above cardiac orifice, about 1½ inch long, and ½ inch thick. A specimen of it shown under the microscope contained numerous blood spaces. The fact that the patient's swallowing power varied considerably from time to time was perhaps therefore to be explained by transient congestion of the tumour. 2. A Hind Brain, showing hæmorrhage into pons varolii, and extending somewhat into fourth ventricle. The patient, a woman of about 53, was admitted, at 11.30 P.M., in a state of coma, with face livid and pupils almost pin-point and equally contracted. Temperature was 104°, and the urine contained albumen. Arms, legs, and probably face were paralysed. There was a spastic condition set up upon sudden movement. Knee-jerks were increased. There was difficulty of breathing, owing to falling back of jaw. On forceps being applied to the tongue she exclaimed " Oh, dear," —an indication that the speech tract was not much affected. Shortly afterwards the right pupil began to dilate, and next morning the limbs were more flaccid. She died at 2.10 P.M., with temperature of 108°. For some time after death it remained above 107°. Dilatation of right pupil was due to extension upwards of hæmorrhage on right side. *Post-mortem* the lateral ventricles were found large and containing a considerable amount of fluid. Horizontal section of pons revealed a large hæmorrhage, $1\frac{3}{4}$ inch wide and $1\frac{1}{4}$ antero-posteriorly. The lesion was diagnosed during life.

Dr Waterston asked why an operation was not done in the former case?

Dr Hutchison cited a case of œsophageal stricture in which the patient was fed per rectum for eight weeks with unpeptonized enemata.

Mr Williams remarked on the long duration, and discussed the question of the position of the cardiac orifice of the stomach.

Dr Bowes replied that the patient would not have an operation. Pancreatized enemata were used.

Dr Hutchison showed Microscopic Specimens of the Cerebral Cortex, presenting pigmentary and other degenerative changes in nerve cells. Was there, he asked, any definite pathology of insanity? After referring to the vacuolation and pigmentary and granular degeneration of nerve cells as described by Bevan Lewis, he stated that he had examined microscopically the brains of forty-seven sane patients who had died of many different sorts of diseases, and about two-thirds of the cases showed pathological changes in cortical nerve cells. The sections were cut fresh and stained with aniline blue black. Brains examined twenty-four hours after death presented the same appearance as brains examined three days later. In five cases of chronic Bright's disease he had found marked pigmentary degeneration, especially of the deeper layers. Chronic nephritis was common among the insane. As to the possibility of congestion being a cause of pigmentation, it was to be noted that the pigment of the cells was not blood pigment, as in the case of the liver. It did not give the iron reaction. He was of opinion that such changes did not necessarily indicate insanity.

Dr Rainy remarked that the tadpole had normally a considerable amount of pigment in its brain cells.

Mr Bramwell asked from what part of the brain the specimens had been taken, and what was the cause of death, in the five cases of Bright's disease?

Mr Williams discussed the pathology of insanity.

Dr Alexander referred to the possibility of the system of fibrils being of more importance than the cells for the actual function of the brain.

Dr Hutchison replied that he had taken the specimens from the left ascending frontal convolution. In one of the cases of Bright's disease the cause of death was uræmic coma.

Dr F. S. Stanwell described in considerable detail an interesting case of malignant disease of the suprarenal glands, and showed the specimens.

Mr Williams having spoken, *Mr Bramwell* cited the case of a boy of 15 who died with symptoms of Addison's disease. On microscopic examination no trace of gland tissue was found in the mass of fat which apparently replaced the adrenals.

Jan. 24.—Dr Macrae Taylor in the Chair.

Mr W. Finlay showed three well-marked cases of Molluscum Fibrosum. After an account of the nature, symptoms, morbid anatomy, prognosis, treatment, and ætiology of the condition, he described the cases. The best marked was that of a man aged 52, in whom the tumours were scattered widely over scalp, face, trunk, arms, and upper part of legs, varying in size from that of a pea to that of a small orange. He had had them as long as he could remember, although at first they were smaller and less numerous. Some were sessile, others pedunculated, a large one on his chest and one at the left buttock somewhat pendulous. Their consistence varied, the small ones being soft, the larger ones firmer. The pendulous one on the chest gave a sort of wormy feeling, and others were obscurely lobulated. The skin seemed normal over most of them. The tumour above the left ear presented a very smooth surface. Their distribution resembled that of a case described by Hutchinson, in which the tumours affected chiefly the upper part of the body. The greatest number were found on front and back of chest; then on scalp, face, eyelids, and arms. There was one large tumour on the left buttock, one large and a few small on the left knee, but none further down. There had been pain in the tumour at the knee, and lately in the large pendulous one on the chest. Mental capacity was limited, and had been diminishing of late. His father had molluscum fibrosum, but was not mentally deficient, while his mother, who was free from tumours, was, if not insane, at least not far from it. Of his three brothers, one had molluscum, and was poorly developed mentally; a second died last March in the Asylum, but had no tumours. The third was in neither way affected himself, but of his ten children two had molluscum. The patient himself had had ten children, four of whom, two girls and two boys, gave evidence of similar tumours early in life, but were as yet fairly intelligent. The eldest girl died at the age of 17 from heart disease following scarlet fever. She had swellings all over her body, except on the face, the largest of about the size of an ordinary marble. They were first noticed when she was four years old. Her skin was very pigmented, and under the right axilla especially there was a large pigmented area measuring 6 in. by 4. The second girl, now aged 20 (shown), also began to develop swellings at the age of four. One large tumour on the inside of the right knee was removed by Dr Miles about a year and a half ago. She also had pigmented marks, of which the largest was $1\frac{1}{2}$ in. by $\frac{1}{2}$ in. The next case was a boy, aged 17, in whom also the swellings appeared at the age of four or five, and had gradually increased in size and number. There were many little spots of pigmentation over front and back of chest, also a large pigmented area, 3 in. by 2½, over right hypochondrium. The youngest boy was now 11 years old, and on him small tumours had been observed appearing a few years ago. They were still small, and somewhat pigmented. In all the children the swellings had begun as simple brown or bluish spots, under which a vesicle gradually formed. From the tumour removed by Dr Miles some short hairs projected. It was slightly pendulous, but not pedunculated, and occasionally gave rise to starting pains at night. The exact nature of the relation between the pigmentation and the tumour was an interesting point. The pigmented spots were only present in those members of the family who were affected with the swellings. Photographs of the cases, taken by Mr Watt, were handed round.

Mr Watt remarked the relation of this condition to myxœdema, and suggested the use of thyroid extract.

At the suggestion of *The President*, and with Mr Watt's permission, the photographs were presented to the Society.

Mr W. T. Ritchie showed a new instrument, viz., a modified form of binaural stethoscope known as the "Phonendoscope." It consisted of a tambour enclosing a spiral spring, and connected with the ear pieces by two india-rubber tubes. Its object was to intensify the sound.

Criticism, chiefly adverse, was taken part in by *Drs Maclean* and *Purves Stewart*, *Messrs Ross* and *Anderson*.

Mr G. Scott Brown gave a detailed account of his method of treating an obscure case of Fever occurring in a girl aged 4 years. Laxative treatment was pushed in order to overcome obstinate constipation, and temperature was controlled by tepid sponging and bathing. After a dose of sulphur, spots appeared on the abdomen on the sixth day, but there was only one crop. He showed the temperature chart, which indicated oscillations between 103° and 96°.

The case was discussed by *Messrs Porritt, Fletcher, Blaikie, Ritchie, Williams, Armour, Watt*, and *Thomas*.

Dr Kenneth Maclean read his dissertation on "The Pathology and Treatment of Gleet." The anatomy and physiology of the urethra were first considered. From peculiarities in the calibre of that canal the urethrometer was more useful for detecting early stricture than the ordinary bougie. Finger had divided the urethra into an anterior and a posterior part, separated by what he called the isthmus, *i.e.*, the narrow portion at the uro-genital diaphragm or triangular ligament. Picard had pointed out that the whole urethra in the female and the posterior urethra in the male was developed from the uro-genital sinus, while the anterior part of the male urethra was developed from a groove on the under surface of an outgrowth from the anterior wall of the cloaca.

Thomson, Henle, Dittle, and Budge were cited as authorities. The muscular tissue surrounding the whole posterior urethra formed a sphincter to the bladder. That fluid injected with the ordinary gonorrheal syringe did not pass the isthmus had been shown by the experiments of Teleki. The cause of chronic gleet was always an acute urethritis set up by the gonococcus of Neisser. The symptoms of gleet were then described and the grounds for diagnosis considered. In the absence of gonococci, the presence of pus-cells, history, the appearance of the canal through the urethroscope, and tenderness to the passage of an acorn-headed bougie, pointed clearly to the nature of the discharge. The source of the discharge, the conditions favouring its continuance, and the common seats of the disease were then considered, also the appearances per urethroscope and microscope. Zeissl's and Kromayor's methods of localizing the condition were described. Finally, treatment was considered at some length, and several illustrative cases cited. The remedy known as sanmetto had been found by Dr Stockman to consist chiefly of sandalwood oil, and to contain some aromatic substances which, when administered alone, gave good results.

Dr Rainy remarked that the endoscope was more useful than was generally supposed. He preferred one with its inner end cut square across. One could see very well with simple tube and laryngeal mirror, there being no necessity for electric light.

Dr Fowler said he had had no experience of the endoscope. He recommended Nesbit's specific.

Dr Macaulay remarked that he, too, had no experience of the endoscope. He referred to the persistence of gonococci in the discharge in chronic cases, and its bearing on the question of marriage. An uncured epididymitis was a frequent source of gleet. He also described a lotion used in the London hospitals.

Dr Berry recommended the use of graduated bougies, the internal administration of perchloride of iron, and the local injection of a weak solution of corrosive sublimate.

Part Fourth.

PERISCOPE.

MONTHLY REPORT ON THE PROGRESS OF THERAPEUTICS.

By William Craig, M.D., F.R.S.E., Lecturer on Materia Medica, Surgeons' Hall, etc., etc.

The Antitoxin Treatment of Diphtheria.—Fortun y André (*Rev. de Ciencias Medicas de Habana*, November 5) reports the results of the serum treatment of diphtheria in Havana, so far as he has been able to collect the statistics. The cases amount to 88, of which 12 died, a mortality of about 14 per cent. Of the fatal cases, however, 6 died within less than twenty-four hours after the serum was used; deducting these cases, the mortality under the treatment is reduced to a trifle over 7 per cent. All the fatal cases with one exception were cases of croup; in only 1 of these was tracheotomy performed. Of the cases that recovered, only 9 were cases of "true croup"; of these 2 were tracheotomised. In point of intensity the 88 cases are classified as follows:—Severe, 36; moderate, 34; slight, 20. In 74 of the cases the diagnosis was established bacteriologically; in 6 of the cases Löffler's bacillus was associated with streptococci and staphylococci. The effects of the serum were the same as those observed elsewhere. As regards unfavourable consequences, albuminuria was noted as following the injection only in 2; in 4 of the cases in which it was present before the treatment was begun it diminished after the injection, and in 1 it altogether disappeared. In 4 cases the phenomena of reaction (rise of temperature and constitutional disturbance) were somewhat alarming; eruptions of various types were seen in 20 cases; symptoms of enteritis in 4; joint pain in 2. Serum from three different sources—Roux's in 15 cases, with 1 death; Behring's in 35, with 6 deaths; and serum prepared in Havana by Drs Davalos and Acosta, and having a strength double that of Roux's, in 27 cases with 3 deaths. The author is unable to give exact statistics of the death-rate from diphtheria in Havana before the introduction of the serum method, but he says there is no doubt that it has diminished since the employment of antitoxin. He gives details of all the cases, with the names of the practitioners in whose care the patients were.—*British Medical Journal*, December 21, 1895.

PITUITARY EXTRACT IN ACROMEGALY.—Marinesco (*Sem. Méd.*, November 13) reports three cases of acromegaly in which he gave pituitary gland substance. In two of the cases the patients, a woman aged 53 and a man of 54, were examples of the massive type of the disease; the third, a woman aged about 30, was an example of the giant type. Under the treatment the headache, which in the "massive" cases was extremely violent, diminished considerably in intensity, but the remedy had no effect on the neuralgic pains in the limbs. The general condition was improved, but Marinesco could not detect the slightest diminution in the size of the affected extremities. The most definite objective effect of the treatment was increased diuresis. Without denying that suggestion may have had some part in the matter, Marinesco believes that the treatment had some action either on the pituitary tumour or on the encephalic circulation. Marinesco stated that both Marie and he believed that acromegaly depends on perverted function of the pituitary gland, but they reject the hypotheses of Tamburini and Massalongo that the hypertrophy of acromegaly is a result of pituitary hypersecretion. In certain cases post-mortem examination has shown that the pituitary body had undergone a heterogeneous transformation, the gland cells having been replaced by elements of a different kind incapable of supplying the normal secretion of the gland.—*British Medical Journal,* Dec. 7, 1895.

THE SERUM THERAPEUTICS OF TETANUS.—Nocard (*Bulletin de l'Acad. de Médecine,* October 22, 1895) points out that the difference in the value of this treatment as applied to diphtheria and tetanus depends upon the evanescence of the immunisation. In the former a local lesion precedes the general poisoning, and one can intervene before the intoxication has become general in the latter. The first symptoms of the disease are those of general intoxication, when it is already too late for treatment. The efficacy of antitoxic serum depends directly upon the speediness with which its injection follows the introduction of the pathogenic microbe or its products. If an animal is poisoned by strychnine, tetanic convulsions come on almost immediately. After the introduction of tetanus toxin no convulsions appear, even with a five-fold fatal dose, for twenty or thirty hours or more. In the meantime the poison has no doubt been exerting its specific action on the cells of the animal, so that the injection of tetanus antitoxin at the time of convulsions is useless even when accompanied by excision or amputation of the part into which the toxin has been introduced. Nocard, therefore, considers that we must for the present, at any rate, abandon the hope of curing an established case of tetanus, since the injection of antitetanic serum has but little influence on the course of the disease. If one could, however, foresee which wounds would be likely to give rise to tetanus, prophylactic inoculation would undoubtedly be of great service. It might be used, for instance, in countries where umbilical tetanus kills 20 to 40 per cent. of new-born children, or in the New Hebrides, where wounds by the arrows of the aborigines are speedily followed by tetanus. Even in France the preventive treatment is being used by many surgeons in the case of certain wounds by firearms, machinery crushes, or when fouled by cultivated earth likely to cause tetanus. A still more promising field is that of veterinary surgery, where tetanus so often follows the minor operations of docking, castration, shoeing, etc. Nocard has, since December 1894, distributed antitetanic serum to twenty-six veterinary practitioners, who have employed it in 375 operations, no animal developing tetanus, while among uninoculated animals no fewer than 55 cases of tetanus appeared. All the operators agree as to the great diminution of the disease resulting from the preventive treatment. Details and a table are given, and the author feels justified in concluding that if the curative treatment of tetanus is yet to seek, the incidence of the disease can be greatly diminished by prophylactic methods.—*British Medical Journal,* Nov. 23, 1895.

Potassium Bichromate.—This drug has a specific effect upon catarrh of the bronchi, both acute and chronic, and will be found of great benefit in catarrhal conditions of any of the mucous membranes. In gastric catarrh it acts admirably, especially if tenderness on pressure over the epigastrium is a marked symptom. In chronic gastric ulcer great confidence may be placed in it; a very small dose, from one-sixteenth to one-twelfth of a grain, given upon an empty stomach, will answer the purpose. This agent will well repay careful investigation, and is without doubt a most useful remedy (*Eclectic Medical Journal*).—*The Medical Age*, September 25, 1895.

Cocaine in Chloroform Narcosis.—At the meeting of the Berlin Medical Society, Dr Roseberg (*The Canadian Practitioner*) advised the spraying of the nasal mucous membrane with a cocaine solution (per cent. not mentioned) before administering chloroform. He states that by this treatment anæsthesia is more rapidly affected and reflex action of the heart is prevented, cocaine being an antidote to chloroform. Its absorption would probably lessen the danger of the latter.

Tropa-Cocaine.—Tropa-cocaine is the name given to an alkaloid obtained from a Java coca-plant. Its action resembles that of cocaine but is not identical with it, tropa-cocaine being less than one-half as toxic as cocaine. Local anæsthesia, both of the eye and skin, is more quickly complete with tropa-cocaine. Solutions of this drug retain their strength for a much longer period than those of cocaine. Iridectomy has been performed without pain in two minutes after ten drops of a three per cent. solution had been put in the eye.—*The Charlotte Medical Journal*, September 1895.

Bromohydrate of Arecolin.—Mouquet (*Nouveaux Remèdes*, November 24) states that bromohydrate of arecolin, an alkaloid extracted from areca nut, has a sialogogue and diaphoretic action, and markedly stimulates intestinal peristalsis in horses and other animals. It has the same properties as eserin and pilocarpin, but in a higher degree, and the indications for its use are the same. Given hypodermically in doses of 2 centigrammes to 25 milligrammes it is found useful in animals, especially in the treatment of intestinal indigestion. Areca nut, though largely employed in veterinary practice, is little used in human medicine. The editor of the *Nouveaux Remèdes* suggests that arecolin might be worth trying on the human subject, but it would be prudent to begin with very small doses, such as 2 to 4 milligrammes. Areca nut is said to be a powerful anthelminthic, the administration of which does not require to be preceded by a purge. It can be taken in milk or in soup without any unpleasant taste being perceived.—*British Medical Journal*, December 21, 1895.

PARENCHYMATOUS INJECTIONS OF ARSENIC IN CANCER.—F. Hüe, of Rouen (*Sem. Méd.*, Nov. 6) has tried injections of arsenic in inoperable cancerous tumours. For this purpose he first used a 1 in 1000 solution of arsenious acid; now he employs the following: ℞ Arsenious acid, 0·20 centig.; boiled distilled water, 100 gr. One or two Pravaz syringefuls of this liquid are injected into the substance of the tumour at intervals varying from two to eight days. In a case of epithelioma of the cheek, which had recurred after operation and was accompanied by swelling of the neighbouring glands, Hüe claims to have effected a complete cure by daily injections during several months of 1 in 1000 solution of arsenious acid. During the treatment, however, the patient had two attacks of erysipelas, and this may have had a curative influence on the tumour. A woman with cancer of the breast, under Planel of Beaumont-le-Roger, is also said to have been cured by the same treatment. The method has been tried in several other cases of recurrence of cancer; in some the progress of the disease has been distinctly retarded, in others the treatment had no effect.—*British Medical Journal*, December 7, 1895.

OCCASIONAL PERISCOPE OF DERMATOLOGY.

By W. ALLAN JAMIESON, M.D., F.R.C.P. Ed., Physician for Diseases of the Skin, Edinburgh Royal Infirmary; Lecturer on Diseases of the Skin, Edinburgh School of Medicine; late Consulting Physician to the Edinburgh City Hospital for Infectious Disease.

ON THE TREATMENT OF NÆVUS VERRUCOSUS.—Lassar observes that a whole series of works have in recent times been written concerning the nature, the anatomy, and the pathological signification of nævus verrucosus. But little has been contributed to the therapeutic aspect. This is all the more easily understood, since it is hardly a disease, occurs chiefly on covered parts, occasions no annoyance, and is of greater interest to the pathologist than to the patient. It is not, therefore, superfluous to mention an observation on its treatment of a successful kind. He thinks it somewhat arbitrary to regard it as a nævus, for, though it may commence in intrauterine life, yet it may also appear in later periods as an acquired disease. The condition is more a wart than a nævus. It is known that soft warts, especially if of recent growth, can quickly disappear under small doses of arsenic. The result is so far uncertain, and apparently connected with the greater or less amount of development of the resistant connective tissue root. But in principle the influence of arsenic on warts is undeniable. He then cites a case recorded and illustrated by Dr Meissner, where a nævus verrucosus on the back and arm of a girl of 12 completely disappeared when she was treated for a couple of months with small doses of Fowler's solution. The complaint had lasted five months.—*Dermatolog. Zeitsch.*, Bd. ii. 1895.

Common Causes of Balndess.—Henry Fournier observes that there are two causes of baldness which are seldom alluded to, possibly from their being so common-place. The first is the abuse of water; the second, deficiency or absence of oil. These two causes act separately; when combined their hurtful effect is intensified. He has inquired carefully into a large number of cases, and is convinced that the greater part would have been in possession of a luxuriant *chevelure* had they taken the trouble to apply some fatty matter to their scalp from time to time. It is true that one finds oneself face to face with a rooted prejudice, and there is nothing more solid than a prejudice. "Fat makes the hair fall off" is repeated on all sides. Or, again, "pomade dirties the scalp." Others, women especially, abstain from oiling their hair, to avoid soiling their hats, sometimes also because it imparts a shiny appearance, which temporarily deepens its colour. Some men very regularly apply some grease to their hair in the morning, but to smooth it finish by passing over it a brush dipped in water. This travels down the hair, conducted by the oil, and wets in an entirely useless fashion the very root, seldom protected by oil. There it occasions constant disturbances. This mode of procedure amply explains why, in a certain number of instances, the hair thins, even though fatty matters have been used constantly. Water permitted to remain on the hair exercises an injurious influence. It is well known that baldness attacks those prematurely whose heads perspire too freely. Under the influence of the exaggerated secretion of sweat the hair is kept in an atmosphere of moisture, against which the sebaceous secretion cannot protect it. The same hurtful effect is produced by passing the wet brush over the hair to smooth it. The custom of oiling the hair prevails among a great number of nations living in entirely different latitudes. The Esquimaux have heads of thick hair, which they regularly oil with whale oil; so have the Africans, who do likewise with other oils. The feathers of birds are specially furnished with oil glands. When sheep are washed or horses are too much groomed they are more susceptible to cold. It is perhaps this which has led to the statement, "dirt keeps warm." And we have no doubt in that lies the explanation of the aversion which many of our fellow-creatures exhibit for baths, nay, even for simple ablutions. It may be objected that cats lick themselves, and make a careful toilet. But it is rather that they remove by means of their roughened tongue the particles of dust from their coat, than that they moisten it with the scanty amount of saliva which they secrete. Oil removes greasy accumulations better than anything. Nothing cleanses the heads of infants from the greasy coating which forms there better than the yolk of an egg. This action is, it is true, favoured by the existence in the yolk of an emulsive principle, in itself useful in other directions, since it is this which aids so powerfully in the preparation of a mayonnaise; this is permanent enough for the effect desired. The application of the yolk to the scalp is of short duration, and the removal, by means of a brush or other instrument, of the products of the combination follows so directly, that it is of no consequence whether the emulsion in this case is or is not permanent. In conclusion, the employment of pomade or other oily substances should form part of the daily toilet. Almost always precious advantages would be derived from this procedure if to the fatty vehicle were conjoined some antiseptic substances. There would thus be added to the preservation of the hair resistance to numerous parasitic diseases which threaten the integument.—*Journal des Maladies Cutanées et Syphilitiques*, Nov. 1895.

XANTHOMA DIABETICORUM (SO-CALLED): ITS PLACE AMONG THE DERMATOSES.—Dr James C. Johnston has published an account of an interesting case, in which there were some peculiar features. He first saw the patient, a man of 57, in 1893. He then suffered from diabetes, which improved under treatment, till after a prolonged debauch he had an attack of heart failure, incipient manifestations of coma appeared, and his life was despaired of. He recovered, however, and under a strict diet the amount of sugar was reduced. A trace of albumen was present throughout. Next ataxic symptoms showed themselves, apparently connected with syphilis some years before, as specific treatment caused disappearance of the symptoms. The xanthoma appeared in May 1893 as a few scattered papules over the elbow. In October the disease was widely disseminated on all parts except the face, chest, and abdomen. The scalp and buccal mucous membrane were also unaffected. The eruption consisted of papules presenting the usual characteristics of xanthoma, dull red in colour, becoming pink as they faded out, discrete or confluent, hard to touch, sharply defined, varying from small lesions of a line in diameter to the raised plaques on the soles, $\frac{1}{2}$ inch in length by $\frac{3}{8}$ in breadth. Many had the yellowish white apices, some had not, nor did pressure bring them out. A tendency to fade and disappear soon showed itself, and progressed, interrupted by slight exacerbations coincident with, if not due to fits of intemperance. Many of the spots entirely vanished leaving no trace, and on March 1894 all that remained were the patches and tubercles on the feet, and a few scattered lesions on the knees and right wrist. In autumn of the same year he again began to drink heavily; the amount of urine passed and the proportion of contained sugar increased day by day, until the latter reached 8 per cent., and the eruption began to reappear. The activity of the process was clearly shown by the fiery red colour of the lesions, in marked contrast to the pale pink seen during involution. The shade might be aptly compared to that of raw beef. When stripped he presented a remarkable spectacle. On the knees the nodules had coalesced into enormous plaques, 4 by 8 inches in size, dotted here and there with the yellow central point of the individual lesion. The face was now implicated, as also the backs of the hands. Johnston estimates the total number of the lesions as not less than 2500. Any pressure on them produced a sensation of tenderness and prickling, and on account of the extreme hardness he seemed to be lying or sitting on a bag of shot. The disease remained in this condition for two or three months, but in April 1895 began slowly to grow paler, after a trip to the seaside, following, as before, an improvement of the diabetes and health generally. It was a curious and notable fact that while whisky was kept from him no involution took place, but if allowed about a pint and a half regularly each day improvement began. As to nosological position, Johnston says that since xanthoma multiplex is an anomaly of formation, while xanthoma diabeticorum is an inflammation due to an irritative process ending in a granulo-fatty degeneration, it is not proper to class them together as varieties of the same disease. Xanthoma multiplex is therefore properly placed and named; it is xanthoma *par excellence*, a yellow tumour. He would propose for the other the term Dermatitis xanthomatoides diabeticorum,—in other words, an inflammatory skin disease which occurs in diabetics who have a personal idiosyncrasy leading to the formation, and which resembles xanthoma. It should thus be placed among the inflammations and not the tumours.—*Journal of Cutaneous and Genito-Urinary Diseases*, May 1894 and October 1895.

QUARTERLY PERISCOPE OF OPHTHALMOLOGY.

By Geo. A. Berry, M.B.

On the nature of certain Degenerative Changes occasionally met with in Corneal Cicatrices.—Yellowish or orange-yellow masses are sometimes found in the cornea more or less co-extensive with old-standing cicatricial changes. Von Hippel (*Graefe's Archiv*, xli. 3) has lately had an opportunity of examining three eyes in which these degenerative changes were present. The masses were found to be situated between the lamellæ of the cornea or of the cicatricial tissue supplanting the true corneal tissue. Although they gave a typical amyloid reaction when treated with iodine solution, von Hippel is of opinion that they are really products of transformation of red blood-corpuscles at the site of little hæmorrhages. In some respects they differ in their chemical reaction, notably in their coloration with carbolated fuchsine, from amyloid bodies. He considers them on this account, as well as from their probable origin, to be colloid masses.

On some of the Conditions for the Development of Suppuration in the Anterior Segment of the Eye after operation, and for the spreading of the Suppuration to the Deeper Coats.—Andogski (Thesis, St Petersburg) has made an exhaustive series of experiments on rabbits with the object of determining the qualities which the aqueous, the substance of the crystalline lens, and the vitreous, possess as media for the development of microbes. He has also studied the effect of introducing pyogenic cocci into the eye at different stages after different operations. Some of the more important of the interesting conclusions arrived at are as follows:—The most favourable medium for the development of the staphylococcus pyogenes aureus is the lens substance. The aqueous and vitreous humours, even when removed from the eye, have the property of arresting for some eight or nine hours their development. A small or moderate quantity of staphylococci introduced into the anterior chamber after operations, which leave the lens and suspensory ligaments intact, does not cause any harm, owing, no doubt, to the germicidal action of the aqueous humour, their absorption by leucocytes, and their rapid elimination from the chamber. The lens and zonule not only prevent any penetration of the cocci into the vitreous chamber, but it was found that even small quantities of the toxines introduced at the same time were not allowed to pass through by diffusion. When large quantities of the staphylococci are introduced into the anterior chamber a purulent destruction of all the membranes of the eye takes place. The lens capsule is first destroyed by the toxines, and then a rapid multiplication of the cocci in the lens itself follows. The microbes pass directly into the vitreous if the posterior capsule also gives way or the toxines diffuse over the posterior section, and cause destruction of the deeper membranes. The same result follows the introduction of smaller quantities of staphylococci if the lens has previously been broken up with a needle. Almost the same also takes place after an extraction of the lens in which some cortical matter remains. On the other hand, the introduction of the same number of cocci into the anterior chamber some months after extraction, when all the cortex has been absorbed, only gives rise to a slight plastic iritis, and this even when a communication has been made between the aqueous and vitreous by needling the posterior capsule. If, again, there be no aperture in the posterior capsule, even larger numbers of cocci cause a destruction limited to the anterior section of the eye, irido-cyclitis, and purulent destruction of the cornea.

ON THE FACIAL NERVE AND THE SECRETION OF TEARS.—Goldzieher having found that in cases of complete facial paralysis involving paralysis of the arch of the palate there was a complete stoppage of tear secretion, concluded that the facial is the nerve which supplies secretory fibres to the lacrymal gland. Experiments, however, made by Tepliachine failed to confirm this function of the facial, as it was found that whereas irritation of the seventh did not cause increased secretion of tears, an increased flow was obtained by stimulation of the fifth. Further experiments have recently been made by Tribondeau (*Journal de Médecine de Bordeaux*, No. 44, 1895), which have given a different result. The lacrymal nerve, which is the immediate secretory nerve, is a compound nerve containing fibres, from the fifth of which it is a branch, and also from the palpebro-lacrymal nerve. Tribondeau was able in dogs by passing an instrument through the foramen rotundum to cut the facial and auditory nerves at the internal auditory meatus. The effect of this lesion is to cause complete facial paralysis, permanent nystagmus, loss of equilibrium, deafness and inclination of the head to the side operated on. After three weeks it was possible to demonstrate that different excitations which brought about increased tear flow on the other side had no similar effect on the side of the operation. From his experiments Tribondeau concluded that the facial nerve is the sole efferent path taken by the nerve current to the cells of the lacrymal gland after reflexion or elaboration of the efferent stimulus (*Rev. Gén. d'Opht.*, Jan. 1896).

ON THE RISK OF ACCIDENTS TO THE EYES IN THE BUILDING TRADE.—Dr Hoppe of Elberfield has collected the statistics of the more serious eye accidents occurring to members of a very large building trade Union during the last nine years. The severer accidents to the eyes formed 5·5 per cent. of the total number of serious accidents, viz., such as entitled the individuals to payment from the insurance fund. For every 100 insured an accident to the eye occurred in 0·0308. The total number of cases occurring amongst the members of the Union, which included masons, stonecutters, carpenters, plasterers, slaters, etc., was 282. 187, or two-thirds of the cases, occurred to the masons, who, however, numbered only one-third of the insured. Altogether, masons appeared to be most exposed to accident, as one-half of all the different accidents, which numbered about 5000, occurred to masons. The most dangerous material, that most likely to be the cause of accident, was found to be lime or mortar. About a quarter of all the eye accidents happened to men through other workers, mostly from pieces of stone and mortar falling into the eyes. A most interesting point brought out in these statistics is, that of the men who had one eye destroyed and were left with the other eye good, 117 in number, not one left their employment on account of the risk to their remaining eye. Only 40 of these 117 suffered some loss, amounting in the average to 16 per cent. in the wages earned; of 89 one-eyed men who had not lost the other eye at their trade, only one earned less than the wages of those who had both eyes.—*Klin. Monatsblätter*, March 1896.

AN ORBICULAR PUPILLARY REACTION.—Gifford (*Archives of Ophth.*, July 1895) found on introducing a lid speculum that strong efforts to shut the eye were associated with contraction of the pupil. With regard to the physiology of this connexion, it is observed that Mendel found in rabbits that the fibres proceeding to the orbicularis from the facial nerve do not appear to arise in the seventh nucleus, but come from the posterior portion of the nucleus of the third nerve. Becterev has also described fibres uniting these two nuclei.

Part Fifth.

MEDICAL NEWS.

DISCUSSION ON CANCER.

The *Montreal Medical Journal* for February 1896 contains the report of a discussion on Cancer which took place at the Montreal Medico-Chirurgical Society. The discussion was opened by Dr J. G. Adami, Professor of Pathology in the M'Gill University, and he was followed by Dr C. F. Martin, Demonstrator of Pathology and Assistant Physician to the Royal Victoria Hospital. Both of them spoke from the pathological side, and were succeeded by three of the leading surgeons. The surgeons confined themselves to the consideration of cancer in definite regions,—one taking up cancer of the lip, tongue, and jaw; another, cancer of the stomach and rectum; while the third took up cancer of the breast, external genitals, and skin. They gave their experience and views of cancer in these various regions, but necessarily dwelt mainly on methods of operative procedure. From these it is evident that our Canadian *confrères* are not behind the mother country in the boldness of their surgical efforts. There was a consensus of opinion that cancer was, in the first place, a local affection, and could be eradicated, if removal were undertaken early enough and the disease was removed thoroughly. Such interest as the discussion presents is largely confined to the papers of Dr Adami and Dr Martin, and it is no disparagement to these gentlemen to say that they have not made any material contribution to the question at issue,—the etiology of cancer. Dr Adami's position may be gathered from his own words: he says, "I cannot but hold that the one fundamental phenomenon underlying the development of cancerous and other neoplasms is the assumption of a habit of growth, a habit of rapid cell division, independent of external stimulus, on the part of certain cells in one or other region of the body." And from this he proceeds to give well-known instances of the power of reproduction, from the begonia leaf to the limb of the crustacean. Much of this he suspects might be regarded as "trite and commonplace" by his audience, and we cannot but share that feeling with him. From this he gets on to the consideration of the effect of chronic irritation, and acknowledges that it is sometimes impossible to tell the surgeons and gynecologists whether a bit of tissue is the result of chronic inflammation or malignant disease. In this all pathologists will agree with him, but we hardly think all will agree with him that "It is impossible thus to distinguish between the two, because the difference is purely one of degree." What distinguishes the malignant process, be it carcinomous or sarcomatous, is, to use his own words, that "The cells continue to multiply utterly irrespective of the needs of the organism." This is hardly a matter of degree; and it goes beyond even this, for it destroys the tissue of the organism where it grows, and grows and asserts itself in spite of the inhibitory and resisting power of the cells of the part. It is this aggressiveness and assertiveness of the cancer process that has to be explained. Multiplication of cells of course depends on an inherent power to so multiply, and multiplication of cells in cancer depends upon the same inherent power; the mode of reproduction is the same; but the effect and the nature of the stimulus must vary within wide limits, as is seen if we place side by side a local irritation leading to proliferation of connective tissue cells, which ceases as soon as the irritant is exhausted, and the proliferation of connective tissue cells, which forms a sarcoma, the cells from which can assert themselves wherever they are carried, and that at the expense both of the connective tissue and the other tissues of the part. It is quite to be recognised, as Dr Adami has put it, that there is an "assumption of this habit of growth," and that once started it continues; that is not only a commonplace but a truism. The question is why the malignant cell not only assumes its habit but continues it; and efforts to explain it by reversal to embryonic type, by Creighton's unconscious memory, or by nerve influence, are mere word-juggling. Dr Martin went directly in the face of the opener's position, and did not believe that irritation alone could explain the formation of cancerous tumours, and that search had to be made for the original stimulus which brings to the cells the power to proliferate. His position was practical and logical, and based upon four sound propositions: (1) That parasites are quite capable of producing cell proliferation independent of inflammatory conditions; (2) that they produce metastases; (3) that it is not uncommon to find parasites selecting special cell structures for their habitat; and finally, there is in the lower animals an epithelial overgrowth and the formation of a fibrous stroma, all induced by the invasion of a parasite. We candidly acknowledge our sympathy with Dr Martin's argument, and think it unanswerable; although, at the same time, we presume the most ardent advocate of the parasitic origin of cancer hardly considers the matter as proved and established.

DR NEWTON M. SHAFFER, Surgeon to the Orthopædic Hospital, New York, has a very interesting and clever paper in the *New York Medical Journal* for 29th February 1896, in which he advocates non-interference in cases of tubercular joint disease. We do not think that there is anything actually new in what Dr Shaffer brings forward, but his manner of doing so is fresh and impressive. It seems to us that there are three things, all of which are well known and established, but which are not always remembered or acted on, upon which he founds the argument of his paper. These three things are,—1. Tubercular affections generally tend to get well. 2. What aids this most is rest, or rather "immobilization." 3. The so-called abscesses that occur in connexion with tubercular affections are not true abscesses (as has been long advocated by many surgeons), and therefore, on the one hand, should absorb readily, and on the other hand do not call for early evacuation. Dr Shaffer's contention, founded on these facts, is that the vast majority of tubercular affections tend to get well if left alone, and rest, good food, tonics, fresh air, etc., are provided for the patients. This, of course, is an old story that every one believes in, provided it can be carried out. Before criticising Dr Shaffer, we must do him the justice to admit that he advocates this system of treatment in a class of cases that most surgeons would consider beyond the benefit of such methods; and further, that he records cases that seem to prove that he is right,—in short, his cases are, from our point of view, very remarkable. We must, however, mention what we consider the weak point in Dr Shaffer's paper. He does not refer to it, but it is very evident on reading his cases. The weak point is that a very long time is necessary for the proper carrying out of this method of non-interference—months, often years,—and during all that time careful supervision is necessary. Now, we need hardly say that this throws the method out of the range of possibility in this country, unless some wealthy persons should come forward and endow large hospitals where the children of the poor can be treated, as the children of the wealthy have been and are treated at present. Whilst thus criticising Dr Shaffer we do not object to his methods; we only wish we could carry them out; but if we tried to do so we would have the surgical wards of our hospitals full of tubercular cases in a month, and not be able to take in a single new patient for many months. Dr Shaffer's method is immobilization by Taylor's splints—these are not so well known in this country as Thomas's,—never incising so-called abscesses, but leaving them to absorb or open of themselves, and giving the little patients (for they are all children whose cases he records) good food, plenty of fresh air, cod-liver oil, tonics, etc. This, as we have indicated, is merely carrying out for poor hospital patients what we do already for the children of those who can afford it. It may be possible to do this in an orthopædic hospital, but it is simply impossible to manage it in a general hospital. We have not the means; we have not the accommodation. We are quite sure that it is often the best treatment to excise a joint, or amputate a limb, and get the patients well in a few weeks, rather than to make them go about for months or years wearing apparatus and having to be taken care of as invalids. At the same time we are much obliged to Dr Shaffer for his able paper and advocacy of a method of treatment which, in the hurry of general hospital surgery, we may be apt to forget.

WE regret to announce that Prof. Vulliet, President of the International Congress to be held at Geneva in September, died last week.

THIRD INTERNATIONAL CONGRESS OF DERMATOLOGY.—The Third International Congress of Dermatology will be held in London this year from August 4th to 8th inclusive. The meetings will take place in the Examination Hall of the Royal College of Physicians and Surgeons, on the Victoria Embankment. Separate sections will be established for Dermatology and Syphilis, the meetings of these being held simultaneously. The scientific portion of the programme is practically complete, and the large number of British as well as foreign physicians who have testified their intention of being present ensures the success of the Congress, of which Mr Jonathan Hutchinson is President. The fee for membership, which entitles to the volume of Transactions to be issued, is £1, payable to the Hon. Treasurer, Mr Malcolm Morris, 8 Harley Street, London, W. The Secretary-general, to whom all communications may be addressed, is Dr J. J. Pringle, 23 Lower Seymour Street, London, W.

"APENTA" WATER.—We have received from the Apollinaris Company a sample of this aperient water from the Uj Hunyadi Springs, near Budapest. The principal ingredients are sulphate of magnesium and sulphate of sodium; but in addition we have sulphate of calcium, chloride of sodium, bicarbonate of sodium, bicarbonate of protoxide of iron, besides traces of lithium, etc. The ingredients are in the proportion necessary to render it one of the most valuable of aperient waters. It is agreeable to take, and will be found very efficient. We can confidently recommend it to the notice of the profession, believing that "Apenta" water requires only to be known to be extensively prescribed. "Apenta" water belongs to that large class of bitter waters from Hungary which are known as Hunyadi Waters, such as Hunyadi Mattyas, Hunyadi János, Hunyadi Arpad, Hunyadi Ferencz, etc. We are assured that the Uj Hunyadi Springs, from which "Apenta" is drawn, have been placed under the control of the State Chemical Institute of the Ministry of Agriculture of Hungary, and the bottling of the water takes place under the direct supervision of this Department. The best security is thus afforded to the Medical Profession that the water is constant in composition, and therefore reliable in its therapeutic effects.

ANÆSTHETIC TABLOIDS.—We have received from Burroughs, Wellcome, & Co. Tabloids containing Cocain-hydrochlor., Morph. hydrochlor., and Sodium chloride, for the production of *local* anæsthesia by subcutaneous infiltration. These are of three strengths.

In each tabloid we have $\frac{1}{40}$ grain of hydrochlorate of morphine and $\frac{1}{5}$ grain of chloride of sodium; the hydrochlorate of cocaine in i. is $\frac{1}{5}$ grain, in ii. $\frac{1}{10}$ grain, and in iii. $\frac{1}{100}$ grain. Each tabloid is dissolved in 100 minims of water. We can confidently recommend these tabloids as most valuable for producing local anæsthesia in minor surgical operations.

"Resorbon."—This is a medicinal snuff, very pleasant in odour, containing volatile aromatics and antiseptics, and will be found useful for colds, etc.

CORRESPONDENCE.

(*To the Editor of the Edinburgh Medical Journal.*)

Havana, *February* 29, 1896.

Dear Sir,—In a second letter addressed to the Editor of the *Crónica Medico-Quirurgica*, Dr G. M. Sternberg informs the readers of that paper that Dr Harrison J. Dyar of New York has discovered among the atmospheric germs of that city a tetragenus which he considers as identical with Dr Sternberg's "Micrococcus tetragenus versatilis" (my *tetracoccus versatilis*), and also with the "M. tetragenus flavus" of Germany.

On receipt of Dr Dyar's paper, and without waiting to ascertain whether all the conditions had been complied with to warrant the identity claimed by that gentleman, Dr Sternberg immediately infers that all my experimental results must be considered null and void, and that my *Tetracoccus* (*a*) "Tetragenus versatilis," can have no possible relation with the etiology of yellow fever.

From a less competent bacteriologist than the present Surgeon-General of the U.S. is known to be, so unjustifiable a verdict upon a subject so serious as the etiology of yellow fever might be attributed to hastiness or to momentary obfuscation, but it is less excusable in one who must be familiar with all the requisites demanded by science before identity may be declared to exist between more or less allied microbes. It is not enough that these should agree in their morphological characters, or that their mode of growth in some particular media should be similar; it is also necessary that their respective influence upon the living animal organism be tested and proved to be similar for each and all the micro-organisms under consideration. This is well exemplified in the instance of Eberth's bacillus, the recognised specific germ of typhoid fever, as compared with the *B. coli communis* so constantly found in the human intestine, both in health and in sickness, from infancy to old age. In order to discriminate between these two bacilli, so different in their pathogenic significance, numerous comparative tests have been resorted to, embracing their morphological characters, their mode of growth upon different media, and the chemical changes occasioned by them, without obtaining incontrovertible results, whereas it is asserted by the highly competent authority of P. Bromerdel and L. Thoinot that the decisive test (*le réactif par excellence*) consists in injecting guinea-pigs with toxine of the typhoid bacillus (*Traité de Médecine de Brouardel,* Gilbert et Girorde, t. i. p. 777.)

Until a similar test has been applied to Dr Dyar's tetragenus, and the pathogenic effects of its cultures or toxines upon young rabbits be proved to be similar to those obtained by me with the "Tetracoccus versatilis," that gentleman's claim to have identified the two micro-organisms cannot be taken into serious consideration. Let it be remembered, also, that the claim of identity embraces three ærial germs which are supposed to develop and thrive with equal facility under meteorological conditions so entirely different as those which prevail in Germany, in New York, in Havana, in Vera Cruz, and in Rio Janeiro.

I am, dear Sir, yours very truly, CHARLES FINLAY.

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GERARD SMITH, M.R.C.S.,—Our Growing Children, with special reference to the Physical Education of the Weakly. John Bale & Sons, London, 1896.

Professor EDMOND SOUCHON, M.D.,—Operative Treatment of Aneurisms of the Third Portion of the Subclavian Artery. University of Pennsylvania Press, Philadelphia, 1895.

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Part First.

ORIGINAL COMMUNICATIONS.

I.—OSTEOMALACIA: WITH A DISCUSSION OF ITS ÆTIOLOGY AND TREATMENT.

By James Ritchie, M.D., M.R.C.S. Eng., F.R.C.P., etc.

(*Read before the Obstetrical Society of Edinburgh, 12th February* 1896.)

Soon after having commenced practice, a case of osteomalacia to which the writer was called made a very profound impression upon him, because although he had the benefit of Prof. Simpson's help, and everything was done which the then existing position of science suggested, the progress of the disease was of almost uninterrupted ingravescence, and it was a relief to all when the patient's hands were folded peacefully in death. The patient was an unmarried lady, aged 37. The symptoms were pain, distortions of bones, debility. The bony outlet of the pelvis with difficulty admitted the examining finger; for months there was copious menorrhagia. Since that time the writer has had four cases under his care, which he wishes to mention in relation to this disease. One, a case which he believes to have been osteomalacia in an early stage,—a woman about middle age, who suffered from pain in the sacrum and pelvis. She had also the rocking gait commonly seen in the disease, but she was not sufficiently long under observation to establish the diagnosis.

Another case he believed to be one of osteomalacia until after the post-mortem examination. This related to a married lady whom he attended for many years, and who had the right mamma removed by Prof. Annandale in 1885 for scirrhus. Her age was then 47. Recovery was rapid and apparently complete. Six years later she began to suffer from periodic attacks of pain in the spine and limbs, she decreased in stature, the pelvis became beaked, the thorax distorted, and about a week before death, which happened at the age of 56, there occurred, while the patient was being moved in bed, a fracture of the fourth rib on right side. At the post-mortem examination the pleuræ were found to be studded with small nodules of secondary cancer. The fractured rib, which was extremely thin, was seen on microscopical examination to be cancerous. The probability is, therefore, that the other bones were similarly affected, and that the case was not one of simple osteomalacia, but of osteomalacia carcinomatosa.

Of the other two cases, the first was a married woman, aged 55, who was much debilitated in consequence of a severe attack of pneumonia. The recovery was very tedious; she began to suffer from pains in the sacrum, spine, and ribs, and diminished considerably in stature. The urine was variable in character, with frequent deposit of amorphous phosphates. This patient recovered slowly under the use of tonics.

The last case was a much more severe one, of long duration; but under Prof. Simpson's able surgical treatment is one of the triumphs of modern methods, and a strong contrast to the case first recorded.

Mrs F., aged 40, married seventeen years, has always been well cared for, and lived in comfortable circumstances. She was pregnant seven times; six children born at full term. About nine and a half years ago she had a miscarriage, soon after which she began to suffer pain in the left haunch, then in the sacrum. During her sixth pregnancy (the next one) the pain became worse, and she had difficulty in walking, but after confinement she recovered considerably. At her next pregnancy, the seventh and last, six years ago, there was a very marked exacerbation of all the unfavourable symptoms: pain in the sacrum and lumbar region, also at the points of emergence of the lateral branches of the intercostal nerves. The pains were aggravated by pressure. She had jerkings of the limbs, especially at night. There was increase of knee-jerk, specially on the left side; also ankle clonus on the right. The walking was feeble, the gait markedly rocking; the difficulty seemed mainly to arise from weakness of the flexors of the thigh. Sensation was normal.

The diagnosis then made was irritation of portions of the anterior horns of the spinal cord, probably due to reflex irritation from the uterus or its appendages. The delivery in June 1889 was by means of forceps; the recovery good, but slow; the walking power after a time much better than before the confinement, with less pain in the bones, but she never recovered the same amount of walking power as she had previous to the last pregnancy. In May 1891, so high an authority on nervous diseases as Prof. Sir Thomas Grainger Stewart, after careful examination, agreed that the case was one of spinal disease. From that time until 1895, the trouble progressed in a somewhat intermittent fashion; the patient drove often in a pony phaeton, and enjoyed best health when she was much out of doors. The pain in the spine extended to the dorsal region; this was entirely removed by the occasional use of Corrigan's button cautery. Various tonics were tried — strychnine, hypophosphites, and phosphorus in emulsion. Early in 1895, as she appeared to be losing in height, the pelvis was examined and found to be beaked, the angles of the scapulæ bent inwards. These changes rendered the diagnosis of osteomalacia evident. At Sir Thomas Grainger Stewart's recommendation, both white and red bone marrow were given, but without apparent benefit. During all this time the appetite was good, bowels regular, menstruation regular, and no exacerbations at the periods. The urine was often neutral or slightly alkaline, and frequently contained a white sediment which was not altogether dissolved by weak nitric acid. The patient became slowly worse, was confined to bed, had the greatest difficulty in turning in bed, and for a time was liable to become faint on rising. Her height was formerly 5 feet, and just previous to operation 4 feet 8½ inches. As other methods had failed, Prof. Simpson was asked to see the patient with the view of having oöphorectomy performed. She was placed under his care, and he operated on 18th June 1895. The recovery was uninterrupted. A noteworthy feature was the rapid disappearance of pain. After ten days the patient was able to turn in bed, and on October 21 the writer received a note from her husband, in which he states that she is able to enjoy existence again after such a long (nine years') illness. "She walked fully two miles the other day, which is in great contrast with her helpless position a few months ago." On 11th February 1896 she stated that she was still improving in muscular power, and less easily tired than she had been for a very long time.

Symptomatology.—Before we discuss the etiology of this obscure disease, it is necessary that we should first recall a few facts regarding its history and course. In relation to it there has during the past ten years grown up a very extensive literature, especially in Germany and Italy, so that there are now at our disposal a large number of facts in relation thereto.

The existence of a disease characterized by softening of the bones has been recognised from early times. Reiske (*Opusc. med. ex monumentis Arabum*, p. 12), tells of an Arabian physician named Gschuzius who had no bones except in the head, neck, and hands. Gelpke gives other interesting references, among which he refers to Mahomet's celebrated soothsayer Gattib, who had no bones. Morand fils submitted to the Faculty of Medicine, Paris, in 1752, a full report of a Parisian woman, Supiot, who suffered from a disease characterized by softening of the bones. It was only about 1772 that osteomalacia was differentiated from rickets by Levacher de la Feutrie. In 1833 Lobstein, and afterwards Guérin, again endeavoured to establish the difference between these two diseases. Bouchard distinguished them completely, but even so recently as 1868 Trousseau contended that "they are one and the same. The differences between them belong to the difference between the conditions in which the economy has been surprised." He calls osteomalacia the rickets of adults.

It is probable that many of the earlier reports, perhaps some even of the later, include cases of other diseases, such as syphilis of bones, fragilitas ossium, secondary general carcinoma of the bones (osteomalacia carcinomatosa), and perhaps also some late cases of rickets.

The onset of the disease is usually obscure. The systems chiefly involved are the osseous and the nervous. Frequently cases, as Latzko points out, are mistaken for rheumatism, or for disease of the spinal cord, having as symptoms paresis of the lower limbs, increase of knee-jerk, contracture of abductors, sometimes muscular spasms, ankle clonus, and general weakness of muscles. V. Braun believes that the diminished power of abducting the thighs is due, not to a contracture of the adductors, but to a want of power of the abductors in consequence of changes in the bones.

The earliest symptom is usually pain in the sacrum, pelvic bones, or spinal column, because the bones in these regions are usually first affected. The pain is more or less constant, aggravated by pressure and by movement. Then follows difficulty in walking, particularly difficulty in flexing the thighs on the trunk, which prevents the feet from being properly raised from the ground, and leads to an awkward rolling or waddling gait. As it advances the bones may bend, or they may be fractured. The bending of the bones is due to the removal of the earthy salts, and the changes in shape are governed by the ordinary laws of mechanics. The pelvis is usually first affected, and in consequence of the pressure through the spinal column on the sacrum above, and the resistance on the acetabula below, these three points are approximated, the shape of the pelvis tends to become triangular, the rami of the pubes more or less parallel, and it becomes beaked. Representations of characteristic deformities are seen in Plate I., Figs. 1 and 2. These are photographs of male pelves which Dr Milne Murray exhibited at the Obstetrical Society, and kindly placed at the disposal of the author. The form of pelvis is modified by the order and degree in which its component parts are softened. In a considerable proportion of cases the outlet is much diminished in size, the tuberosities of the ischium are not only approximated, but they are pressed backwards towards the coccyx, so that an examining finger enters the outlet with difficulty; but in Plate II. are photographs of a female pelvis from Prof. Simpson's museum, in which the outlet is not diminished in the ordinary way, the ischial tuberosities were displaced upwards and forwards in consequence of the folding upon itself of each os innominatum. In consequence of these distortions the origins and insertions of the muscles which act on the thighs are approximated, and their ability to act is therefore diminished. Next in order, the spinal column is affected; it is liable to become twisted in a variety of ways, the height of the patient is thereby diminished, and the thorax is deformed. The ribs also may be involved, in consequence of which further deformity of the chest results, its sides are forced in, sometimes hollowed by the weight of the arms,

PLATE I.

FIG. 1.

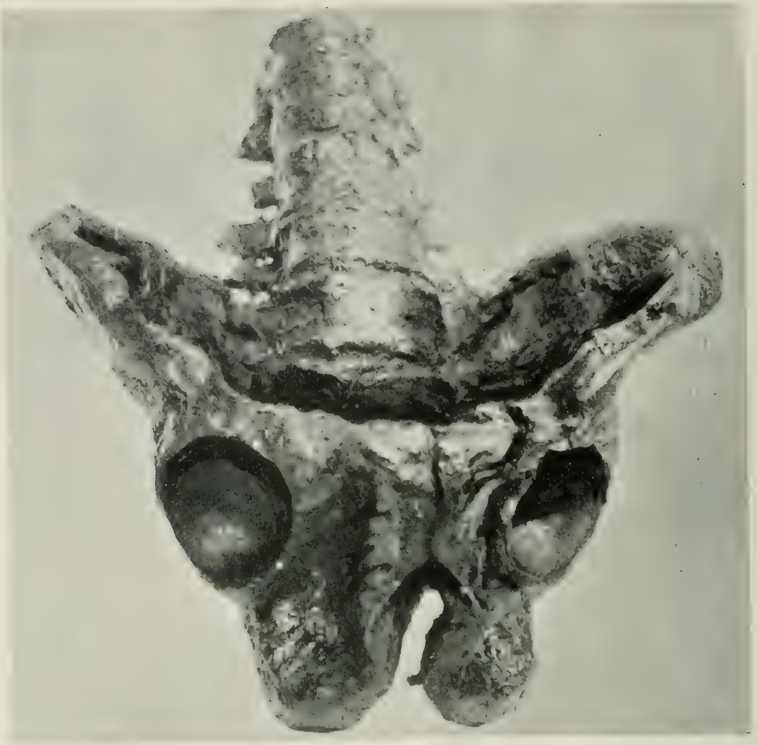
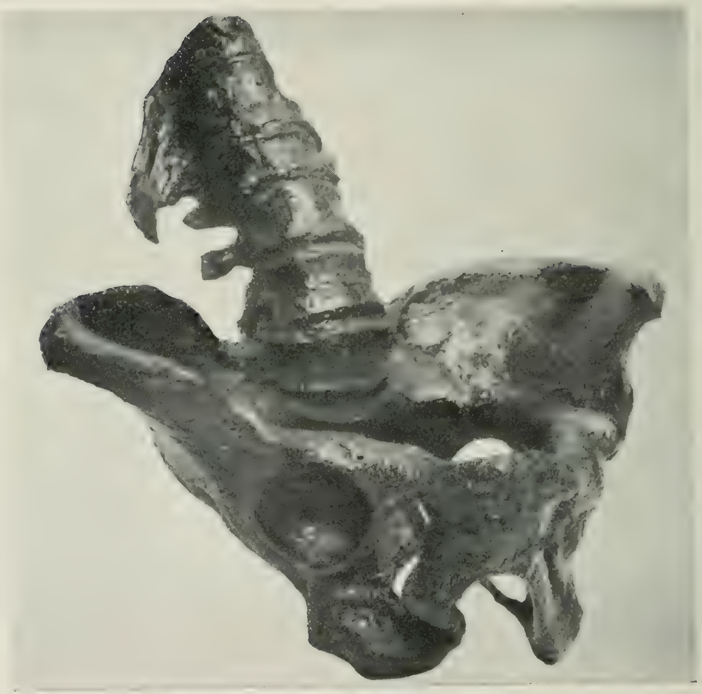


FIG. 2



From Photos. of Male Pelves, showing changes characteristic of Osteomalacia.

PLATE II.

Fig. 1.

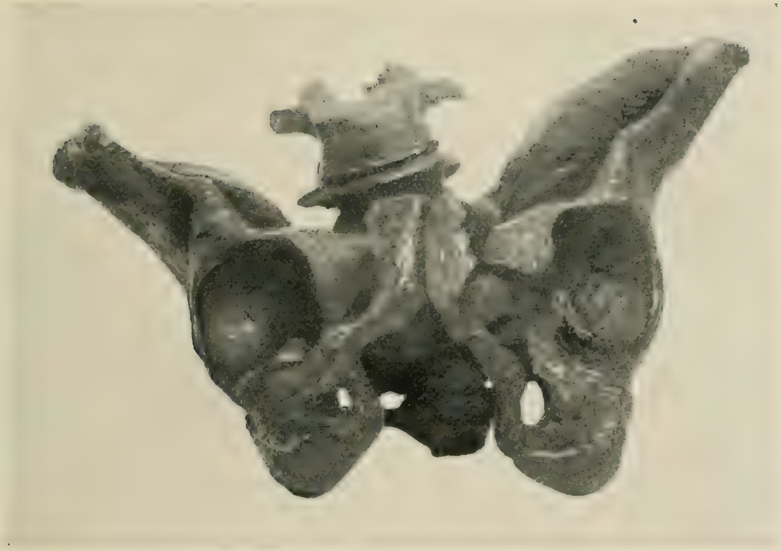
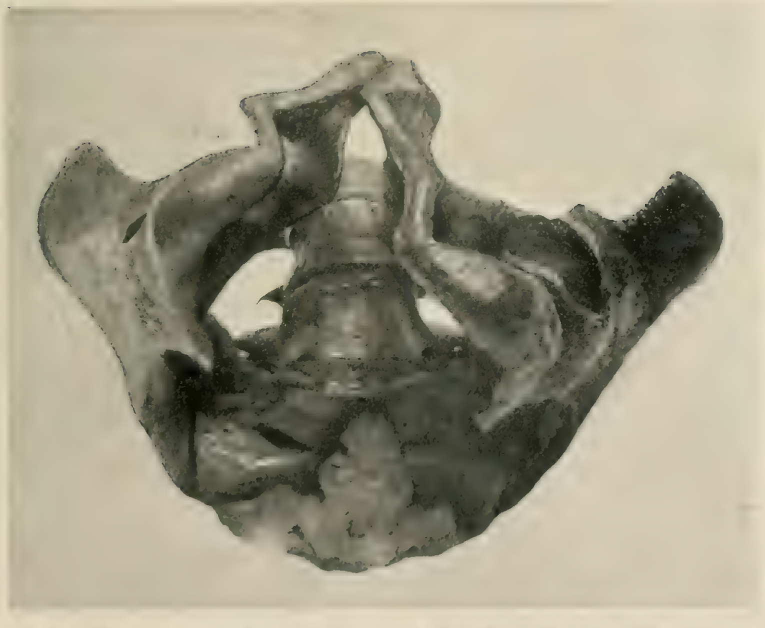


Fig. 2.



From Photos. of Female Pelvis. Fig. 1 is a front view: Fig. 2 a Photo. of the outlet of the same Pelvis. This deformity is one of the less frequent varieties.

the sternum is thrown forward. The angles of the scapulæ become incurved. Later the long bones may be involved and distorted in a variety of ways. Allison (Newcastle) reports a very exceptional case in which the disease began in the bones of the right leg, later the left leg was involved; after ten years it spread to the pelvis, and later to the other bones of the trunk. The bones of the cranium are very rarely affected. Trousseau, however, reports a severe case of the disease in which they were involved (*Clin. Med.*, New Syd. Soc., 1872, p. 86). As an evidence of the extent to which the distortion and also the flexibility of the bones may pass, the following extract from a letter from Ed. von Siebold to Kilian in 1856 is of interest:—"I—— had long been burning with desire to perform the Cæsarean section. At length he thought he had a suitable case—a woman afflicted with osteomalacia. He invited his colleagues (not me) to the operation, the deceased O—— with others. The woman already lay on the operating table, when O—— begged permission to make another examination. He made it, and gradually passed in his whole hand, forcing the soft pelvic bones apart, turned the child, and brought it through living. This was on a Saturday, and he came to me early on the Sunday, and with tears of joy in his eyes told me, 'Yesterday I saved a woman from the Cæsarean section, and also from death.'" Barnes records several other similar cases. On the other hand, Durham describes the case of a woman, aged 45, who had fractures of several bones, with no attempt at union, but at the post-mortem all the bones could be cut with a knife. Fehling had under his care a pregnant woman who fractured the upper part of the thigh in getting out of bed, who was completely cured after he had performed Porro's operation.

Nervous System.—Reference has already been made to the frequency with which this disease is, in its early stages, diagnosed as some affection of the spinal cord, in consequence of the existence of nerve symptoms. It has been customary to consider these to be the result of compression of nerve trunks; but this cannot be so, because they occur in the early stages before absorption of the bone salts. Increase of knee-jerk has been frequently noticed, and occasionally ankle clonus. Velits found in half of his cases rhythmical movements like those characteristic of cerebro-spinal sclerosis (but he considers them to be pressure symptoms). V. Braun had a case with tetanic seizures. Latzko attaches importance to the symptoms of pseudo-spinal paralysis, and considers that paresis of the flexors of the hip and contracture of the adductors are characteristic of the disease. Köppen found pain on pressure on nerve trunks as well as on bone, increase of knee-jerk, ankle clonus, in some cases muscular tremors, and in some difficulty in standing with the eyes shut. Pommer and Renz had each cases in which they diagnosed the existence of spinal disease. Trousseau and Lasègue found not only increased knee-jerk, but hyperæsthesia. Alterations of cutaneous sensibility are, however, rare.

Muscles.—From an early stage there is muscular weakness. The psoas and iliacus are generally early affected. The patient is unable properly to flex the thigh, and therefore cannot raise the foot from the ground. To aid in the accomplishment of this the body is thrown to the opposite side, and the gait is thus waddling in character. Renz treated twenty-two cases, in all of which the diagnosis was certified by manual examination, and in all of them he found paresis of both legs. Köppen saw one case in which there were bone deformities without muscular weakness, but in the majority of cases he found muscular weakness before bone changes had taken place. He found the faradic and galvanic irritability of the muscles diminished; on two occasions he got contraction with the constant current.

Digestion may remain good. The respiratory and circulatory systems are only secondarily affected in consequence of and in proportion to the distortion of the thorax.

Generative System. — Apart from difficulties in parturition, because of distortion of the pelvis, the generative system seems to be healthy. Fehling, Runge, Velits, and Neumann state that there is increased fertility, but v. Winckel, Latzko, and others have adduced statistics to controvert this view. Fehling gives the average births for—Switzerland, 3·45; Germany, 3·9; his own cases of operation for osteomalacia, 5·4; Baumann's cases, 6·8; Rosenträger in 39 cases of osteomalacia in which Porro's operation was performed, 8·2; 242 other cases of healthy women, 3·7.

Several cases of osteomalacia which occurred about the climacteric had metrorrhagia. One very severe case recorded by Sippel defied other treatment, but was cured by oöphorectomy.

Urinary System.—It has been frequently stated that the urine is excessively acid. Senator doubts the truth of this. It is at least not an invariable, if it be a frequent occurrence. In the writer's cases it was not excessively acid, but often neutral or even alkaline, with a deposit of amorphous phosphates. An increase in the amount of phosphates excreted in the urine is recorded in a large number of cases. When it was discovered that the earthy salts were removed from the bones, attention was naturally turned to the urine, with the view of ascertaining the amount of them excreted. Many observations have been made; the results have been widely different. Solly found three or four times as much phosphate of lime as in normal urine; Kier about ten times as much CaO as normal; Hennig in seven cases observed the CaO normal or below normal, and in five cases increased. Barnes had careful analyses made of the urine of a nullipara, aged 40, in an advanced stage of the disease, and Bence Jones made a number of analyses of the urine of a man, aged 45, a patient of Macintyre's. In both of these cases there was a great increase of the alkaline phosphates, and only a slight increase of earthy phosphates. Chambers found similar results; in his case the alkaline phosphates were nearly double the normal average. Schramm and Wulff also found the alkaline phosphates increased; but whereas the former found the earthy phosphates normal, the case examined by the latter had them diminished. Fehling made a series of careful determinations (*Archiv f. Gynäk.*, 1891) of the amounts of CaO and P_2O_5 passed in the urine by two patients with osteomalacia, and found the daily amount to be actually less than that obtained from the urine of a healthy person. Last year (*Archiv f. Gynäk*, 1895) he made a more extended series of observations, at three periods, viz., before operation, soon after it, and at a later date; from these he was compelled to conclude that there was no constant result. In two of his cases the average daily amount excreted in the urine was greater after than before operation. He also compared the average discharge from a patient with osteomalacia with that from one lying next to her with fibroma uteri, the two having similar feeding for a period of eight days.

	Urea.	P_2O_5.
Osteomalacia, . .	29·33 gr.	2·05 gr.
Fibroma uteri, . .	30·94 gr.	2·19 gr.

In all these cases, however, the results were of less importance, because there was no exact comparison between the amount ingested, and the amount excreted both through the urine and by the stools. This has recently been done by Neumann (*Archiv f. Gynäk.*, Bd. xlvii. Heft 2, 1895) in relation to a married woman, aged 37, who came under his care in the Clinic six weeks after her ninth confinement. On admission she could only turn a little on the sides, but could not stand. She was carefully dieted, the CaO and P_2O_5 were determined in the food taken, also in the urine and fæces during two periods,—first, a period of seven days, beginning on 27th February, nine days after admission; and again during a similar period a month later, at a time when she was so far recovered that she was able to walk alone. Ten days after the close of the last observation she left the Clinic, although rather feeble, yet able to stand, and to walk without support.

In studying the following Table it must be borne in mind that seven weeks had elapsed after confinement, and that the patient had already been in the Clinic under favourable dietetic and hygienic conditions before the first series of observations was commenced. During the seven days of the first series of observations the excess of CaO ingested above that excreted was 5·33 grammes. A month later, by which time recovery had made considerable advance, and the bones might be expected to be in a more healthy condition, the excess of lime retained in the system was 3·8 grammes. During the first set of observations the Mg. excreted was in excess of that ingested, but during the second period more was taken than was excreted. The greatest difference is seen in the amount of P_2O_5—during the first period 16·18 gr. was excreted during the seven days in excess of the amount taken, whereas during the last period 14·48 gr. more was taken in than was discharged.

		Total Ingested in 7 days.	Excreted.		
			In Urine.	By Stools.	Total for 7 days.
Feb. 27 to March 5.	CaO	27·5410	1·06	21·15	22·21 gr.
March 29 to April 4.	CaO	29·2160	0·80	24·60	25·40 gr.
Feb. 27 to March 5.	Mg.	1·3555	0·43	1·53	1·96 gr.
March 29 to April 4.	Mg.	1·4397	0·17	0·91	1·087 gr.
Feb. 27 to March 5.	P_2O_5	27·28	26·04	17·42	43·46 gr.
March 29 to April 4.	P_2O_5	29·93	12·72	2·73	15·45 gr.

Warschauer found in his cases of osteomalacia an increase of urea. Fehling in two of his cases, while they were at rest found 25·22 gr. (= 379 grains) and 29·33 gr. (= 452 grains) per diem, and in the former of them a very marked diminution after operation. Truzzi, on the other hand, taking N as a basis of his observations, concluded that in women suffering from osteomalacia the nutritive changes are very low; but some time after operation he found a marked improvement in this respect. Chambers also, in a case in which the muscles were almost entirely degenerated, found, as might have been anticipated, a great diminution of urea.

Bence Jones found in the urine of the case referred to, a deposit hitherto unknown. It slowly dissolved in cold water, more readily in boiling; it contained S and P, and he considered it to be an oxide of protein. He concluded from this that the patient was labouring under a distemper in which the gelatinous matter in the bones was not in a healthy state; that it was not simply phosphate of lime, but bone or bony elements,—that is, both gelatine and calcareous salts, that are carried out of the system.

Hermann found lactic acid in the urine, but several others failed to find any. Petrone found nitrites, and he considered that the discovery of these was a strong proof of the truth of his theory of the origin of the disease. Zuccaro, Trotta, and Tschistowitsch also found nitrites, but they also obtained them from the urine of persons not suffering from this disease; and the two first named showed that they did not occur in fresh urine, but were the result of decomposition. In fresh urine they never got the reaction described by Petrone.

With the advance of the disease there is persistence of pain, increase of muscular weakness; the patient is confined to the house, then to bed, the general health becomes affected, and after months or years of suffering may die exhausted. Allison's case, a very exceptional one, recovered after twenty-four years' illness.

The occurrence of pregnancy usually causes a more rapid advance of the disease; after confinement there is a remission, and in some cases apparent recovery. Its severity does not depend upon the length of time which it has lasted. Some cases run a very rapid course, others advance slowly. Allison records a case which began in a girl at the age of 19 in the right leg; ten years later the pelvis was affected; and when she came under his care, the disease had lasted for about twenty-four years.

It is evident, therefore, that the symptoms which are characteristic of the disease refer to changes in the osseous system, and the consequences of these; also to changes in the nervous system. The earliest symptoms are pains due to congestion of the periosteum; these pains are aggravated by pressure and by movement. Muscular weakness occurs early, before evident bony changes; and they are due partly to a diminution of the distance between the origins and insertions of muscles. Alterations in the shapes of bones and of cavities—as, for example, contraction of the pelvis—are later symptoms. Nervous symptoms occur early and independently of pressure from changes in the bones. The disease may at any stage be recovered from, but frequently it progresses slowly or rapidly, continuously or with remissions and exacerbations.

Age.—There seems to be considerable difference of ages at which the disease occurs in different localities. A few cases are described as occurring at early ages, but it is doubtful whether they were not cases of late rickets. A case at a very early age is described by Rehn of Frankfort,—a female child, aged 16 months; the case was examined by v. Recklinghausen, who found rachitic changes at the ends of some bones, while others were characteristic of osteomalacia. Prof. Vierordt gives it as his opinion that osteomalacia in children has not yet been established. In the statistics of the death-rate in Bavaria the largest number of deaths from this disease is returned between the ages of 20 and 30.

	Youngest.	Oldest.	Average.
Berne Obstetric Clinic, 1867–89, .	25	41	35
Zurich Obstetric Clinic, 1870–89, .	32	42	38
Gelpke's Practice, Basel, . . .	25	58	38·5
Basel Obstetric Clinic, 1874–88, .	25	43	38
31 cases collected by E. Kummer, .	26	51	34·2
Turin Obstetric Clinic, cases by Gallia,	20	46	33·6
Cases collected by Truzzi, . . .	22	43	36·3

The preceding Table almost seems to support Fehling's statement that the disease is confined to the period of sexual activity, but we must remember that they are nearly all taken from obstetrical clinics. Michnow in 1889 showed a girl, aged 18, the subject of the disease, who had been affected for two years. Chambers had a case which began at 18. In Gelpke's practice there is one 58; von Späth operated on a woman, subject of this disease, at age 70; Weber examined the body of a woman, aged 71, who suffered from it; Gull had a case aged 54. Of the cases collected by Durham, twelve were over 50.

Sex.—Some writers have questioned whether it is not a different disease which occurs in men. Fehling is of this opinion. Kehrer records two cases in men, the sons of a woman who had osteomalacia. Durham collected 145 cases, of which 13 occurred in men. Litzmann in 131 cases found 8·4 per cent. in men, 91·6 per cent. in women. He says that as among men there is the absence of child-birth as a guide, probably many cases are overlooked. Milne Murray showed at the Edinburgh Obstetrical Society two pelves from male subjects which were in all respects characteristic of the disease (see Plate I.). In these specimens the lower dorsal vertebræ were moderately hard, but the lowest lumbar vertebræ and the pelvic bones were soft and easily cut with a knife. The following statistics are from the death-rate returns:—

1882-89.	Bavaria, . .	Women, 140	Men, 75
1881-86.	Italy, . . .	„ 170	„ 23
1880-88.	Switzerland (whole of),	„ 73	„ 6
1878-80.	Great Britain, . .	„ 71	„ 25

In the year 1880, in Great Britain, there was a change in the Registrar-General's Returns, which renders it impossible to obtain statistics of this disease after that year.

Pregnancy.—The frequent recurrence of pregnancy favours the production of the disease. If the disease be quiescent, the recurrence of pregnancy causes an exacerbation. The natural history of pregnancy is such as to afford an explanation of the more rapid progress of the disease during gestation. Casati found that in Milan from 1852 to 1870 there had been 62 cases, being about 7·7 per 1000 of obstetrical cases. Gallia in the Obstetrical Clinic of Turin from 1861 to 1890 found 27 cases, or 2·9 per 1000.

Volkmann, Fehling, Kehrer, and others divide the cases into puerperal and non-puerperal. The latter class includes nulliparæ and men. The proportion of puerperal cases reported by different observers varies considerably.

Litzmann in 131 cases found	64·88	per cent.	puerperal.
Hennig . . .	68·2	„	„
Casati	64·9	„	„
Italian statistics . .	81·0	„	„
Gelpke, of 19 cases .	94·8	„	„

Durham states that of 132 cases which he collected, in 91 the symptoms first appeared during or shortly after child-birth. Ribbert states that there is no difference in the anatomical characters of the bones of pregnant and of non-pregnant cases. Probably the difference is only a clinical one, in consequence of the absence of the peculiar reflex irritation which occurs during pregnancy. In men there is not that nerve influence which causes a periodic congestion of the pelvic organs and soft parts during menstruation. It is possible that the frequent congestion of the pelvic contents during menstruation and pregnancy affords the explanation of the frequency with which the bones of the pelvis are first and most seriously affected in women.

Lactation seems to favour the production of the disease. Kleinwächter says that Jewish women are specially liable to it, he thinks because they nurse their children longer than the other portion of the population. The influence of prolonged lactation alone is insufficient to produce the disease, because it is unknown in Japan, where it is customary to nurse for two or three years. Gelpke found that, of 22 cases of osteomalacia, four nursed very long, nine nursed, five nursed a little, and six did not nurse at all.

Menstruation.—Hennig describes a catamenial form. Collineau found, in 52 cases, that 14 had exacerbations at the menstrual periods. Such exacerbations are not, however, the rule.

Locality.—Von Winckel, sen., before 1861 had performed Cæsarean section for osteomalacia thirteen times. Latzko in 1894 stated that he had himself observed 50 cases of the disease. He does not believe that it is endemic, but that certain men are interested in it and capable of diagnosing it. Kehrer since 1881 had seen about 45 cases in the Heidelberg Clinic. In October 1894 Truzzi tabulated a large number of cases which, between 1887 and 1894, had been operated upon by various gynecologists,—viz., Fehling, 14 cases; v. Velits, 12; Schauta, Löhlein, Truzzi, each seven; Chroback, five; Hofmeier and Müller, each four; v. Winckel, Kotschau, v. Kézmárzky, two each.

From the death-rate returns, and from the above statistics, it is evident that osteomalacia is more frequent in certain localities than in others, even if we were to admit that Latzko's statement contains a measure of truth. The disease is somewhat common in

Italy and Switzerland, in Bavaria, Wurtemberg, Baden, and Alsace; it is less common in Austria; rare in North Germany, Russia, Northern Europe, Great Britain, and France. It is a matter of very considerable interest that, whereas it formerly prevailed in Gummersbach and in Sottegem, these districts are now almost free. Gallia states that of 27 cases which have occurred during the past thirty years in the Turin Clinic, the greater number came from a district of which the soil is poor in lime salts. Pommer and Litzmann state that the disease is more common in asylums than elsewhere; also that it sometimes follows psychoses.

(*To be continued.*)

II.—OBSERVATIONS ON MENTAL AFFECTIONS IN CHILDREN, AND ALLIED NEUROSES.

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(*Continued from page* 721.)

In again presenting my classification of idiocy I do not intend to repeat the description of the different forms already made with sufficient fulness in my book *On Idiocy and Imbecility*, in the article "Microcephaly" in the *Dictionary of Psychological Medicine*, and the paper on "Sporadic Cretinism" in the *Edinburgh Medical Journal* of May 1893. But I shall give a brief account of some rare forms of idiocy which have been described by recent observers in pathology. One might expect to derive some light about the functions of the nervous centres by the study of those cases in which different portions of the brain are absent, whether through congenital defect or some destructive process in early fœtal life.

Porencephaly was a word happily applied by Heschl to designate that deformity of the brain in which there is a communication between the lateral ventricles and the surface of the hemisphere. Since Heschl published his memoir on the subject in 1859 a number of cases have been reported, not because the affection is common, but because it is so rare that it is a distinction to have seen an instance of it.[1]

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[1] The following are amongst the most important papers:—"Observation de Porencephalie Fausse Double," par le Prof. Mierzejewski, *Archives de Neurologie*, Nos. 3 et 4, Paris, 1881. Kundrat, "Die Porencephalie eine Anatomische Studie," Graz, 1881. "On the Spasmodic Paralyses of Infancy," by James Ross, M.D., *Brain*, 1883, p. 473. "On Porencephaly," by Prof. Lambl of Warsaw, in *Archiv für Psychiatrie*, Band xv., Heft 1; and by Dr R. Otto, *Archiv*, Band xvi., Heft 1. "Kreuser ueber einen Fall von erworbener Porencephalie," *Allgemeine Zeitschrift für Psychiatrie*, Band xlviii. p. 146, 1892. *Idiotie Complète Symptomatique de Double Porencephalie Vraie*, par Bourneville et Dauriac. *Recherches Cliniques et Thérapeutiques*, par Bourneville, vol. xiii. p. 89, Paris, 1893. In the *Journal of Mental Science*, Oct. 1894, there is a description of some cases by Dr Conolly Norman and Prof. Alec Fraser, and also a list of the literature on the subject.

Porencephaly has been divided into true and false. It would be better to say congenital and acquired.

TRUE PORENCEPHALY is a deformity dating generally from the fifth to the seventh month of intra-uterine life.

Pseudo-porencephaly is owing to a giving way of the walls of the lateral ventricles after birth, owing to a destructive lesion of the cerebral matter between the lateral ventricle and the surface of the hemisphere.

The seat of true porencephaly varies little. The opening generally occurs in that portion of the brain which is supplied by the middle cerebral artery. The gyri most affected are the third frontal, the ascending frontal and ascending parietal, the gyrus supramarginalis, and the first temporo-sphenoidal; when the opening is more extensive the neighbouring convolutions may be invaded. While the arachnoid bridges over the funnel-shaped cavity, the pia mater descends from the circumference of the hemispheres to line the walls down to the ependyma of the ventricles, and from the depth of the pit the gyri laid bare radiate as from the cup of a wheel. The cavity is generally filled with clear serum. The symptoms vary with the parts and the extent of the area affected. Porencephaly generally involves both sides, in some cases only one hemisphere. There is generally paralysis on the side opposite; where both sides are affected there is idiocy, in most cases accompanied by mutism.

After a study of a number of cases, Mierzejewski came to the conclusion that where there is an arrest of development of the median convolutions there always is a paralysis of the opposite side of the body. The case described by the professor was an idiot of a very low type with stiffened joints, who was carried about in a wheelbarrow and exhibited, to the sounds of a barrel organ, to gain money from the pity or amusement of the crowd.

It must, however, be kept in mind that the basal ganglia have been found in many cases to be smaller on the affected side, and in a few have almost disappeared; secondary descending degenerations do not appear to have been often noticed in congenital porencephaly; but this is perhaps owing to their not having been carefully looked for. They have been frequently observed in the extra-uterine variety. In some cases there is a want of symmetry in the form or arrest in the growth of the cranial bones. Kundrat found that out of eighteen cases of born porencephaly only three lived beyond the period of infancy.

It does not appear to me that a satisfactory explanation of the causes of porencephaly has as yet been presented. Kundrat believes it to be due to anæmia of the Sylvian artery causing inflammation, or softening with reabsorption of the dead tissue; Klebs that it is due to obliteration of the fœtal vessels. It can scarcely be due to internal hydrocephalus, as from the funnel shape of the aperture the pressure must have come from without inwards, nor is there observed in the congenital form any traces of loss of substance from within outwards. When we consider the unsupported or undermined condition of the gyri which form the roof of the lateral ventricles we see that there is likely, in this part of the hemisphere, to be a difficulty to nutrition and growth, and where the formative forces are feeble they may be insufficient to bridge over the ventricle. The appearance of the aperture does not suggest an inflammatory process; on the other hand, in false porencephaly, due to encephalitis, hæmorrhage, embolism, or external injury, the lining of the wall of the cavity is rougher, and there are evident traces of inflammatory process and uncompleted absorption.

Dr Ross has given a good description of porencephaly in a little girl who died of croup at the age of 2 years and 5 months. At the age of three months her parents first observed that she could not hold her head up, and that her hands were stiff. She never at any time suffered from convulsions. The child was small for her age, but fairly nourished. The legs were kept in a half flexed condition, the feet extended, and the heels drawn up. The arms were held semiflexed in a symmetrical position. The muscles of both extremities were in a state of spasmodic rigidity. Any attempt to alter by passive motion the position of the limbs caused increased spasmodic contractions. The head was kept bent forwards, the chin upon the sternum; but she could raise her head by an effort, soon again to fall into the old posture. She could voluntarily grasp an object with each hand, but the movements were irregular and uncertain. She could only utter a few monosyllables.

On examination after death a deep sulcus was found on each side of the brain about the site of the fissure of Rolando, extending from the point of bifurcation of the Sylvian fissure for about 1½ inch upwards. Each sulcus opened into the corresponding lateral ventricle by an aperture the size of the little finger. Each opening was surrounded by a ring of grey matter having all the naked-eye appearances of the cortex. The ascending frontal and ascending parietal appeared to be absent, and the surrounding gyri were displaced. The crura cerebri, pons, medulla oblongata, and spinal cord appeared quite normal to the naked eye.

Dr Ross tells us that "a microscopical examination of the grey matter forming the walls of the cavity shows a structure more or less similar to that of the healthy cortex. The giant cells of the inner division of the third layer of the cortex are, however, absent. This division contains large, round, nucleated cells, but they are entirely destitute of processes; and, indeed, absence of processes is a marked feature of all the cells observed, the cells being in this respect like those met with in the cortex of the brain in the embryo. The spinal cord on microscopical examination appeared in every respect normal, except that the lateral columns were somewhat smaller than the corresponding parts in a healthy cord. The anterior pyramids of the medulla oblongata are not much more than half the size of the pyramids of the medulla from a healthy child of the same age." In a case described by Bianchi,[1] a man of 63, who had paralysis of the right side, but did not seem to suffer in intelligence, there was found porencephaly in the left hemisphere. The microscope showed that the cerebral tissues around the funnel had remained in the embryo stage, the pyramidal cells not having attained their full development. In the case of deep idiocy described by Mierzejewski the distribution of the grey matter of the cortex was found to be very irregular.

In 1861 Heschl published another detailed observation of porencephaly.[2] The subject was a girl not 17 years of age, who had died of phthisis pulmonalis. Her intellect was not affected, save that the memory was weak. She spoke well, put reasonable questions, and answered with judgment. She had an excellent character. She laboured under a paresis of the right side. The right arm could scarcely execute a few voluntary movements; the fingers were powerless; the right hand was a little flexed upon the forearm, but this could be easily undone. The right leg was dragged upon the ground. The patient complained that the paralyzed members were swollen and painful. On examination there was found towards the upper half of the fissure of Rolando two cysts or vesicles, the walls of which were formed by the membranes, and which were filled with a serous fluid. On emptying the upper cyst they found a canal about a finger's breadth which communicated with the lateral ventricles. The neighbouring gyri radiated from the inner orifice towards the margin of the convexity of the hemispheres and even beyond this.

From several recorded cases in which the intelligence was well preserved, as well as from theoretical considerations, we may conclude that unilateral porencephaly, unless it were extensive, would not be enough to cause idiocy without the addition of deficient development or degeneration of the tissues of the rest of the brain.

Prof. Lambl[3] of Warsaw has described a case in which one-sided porencephaly went along with an unusual amount of sharpness. Catherine, natural daughter of Marianne Kwiecen, used to go about the district of Nowo Alexandrowsk. Under the guidance of her mother she gained great reputation as a clairvoyant, interpreter of dreams, and healer, and many of the richer people in the country went to consult "the little witch." Her grotesque appearance was of service in keeping up such pretensions. Small and weak, somewhat paralyzed on the right side, the body leaning to the left, squinting, and with an unsteady gaze, she was ready of retort, cunning, and quick of wit, and knew how to assume a tone of confidence which had its effect upon the country people. Her materia medica was of a striking character, such as to rub the limbs with dogs' or cats' fat, or to take soup made from rats' flesh. Her prescription for phthisis was peculiar, a bath in a decoction of rye-straw, and when the patient had left the tub a cat was to be thrown in. If the cat were drowned the patient would recover, otherwise not. As most cats are active enough to leap out of a tub, this may be thought a roundabout way of conveying an unfavourable prognosis. In 1872 the little witch was brought by the police to the Hospital at Lublin, where she was examined by Dr Schmidt. She was then 12 years of age. He found her very intelligent, with an excellent memory, although she had never been at school. She wandered through the wards, showing great curiosity about the patients, and asked questions from the apothecary about the medicines which they got. The right side was found feebler than the left, and the muscles more weakly developed. She had divergent strabismus with nystagmus; the sight in the left eye was weak. Her appetite was good; the sleep troubled with wild dreams. Examined about her pretensions as a healer and soothsayer, the creature showed considerable tact and cunning in evading searching questions. She said that three years before, when she was looking after some calves in a meadow, she had a vision of a beautiful lady, who soon began to vanish, save the head and hat, and who cried out, "Be quiet, Catherine; you will no more have to look after calves, but will go about towns and villages curing the sick." After she had been two months in the hospital, Catherine confessed that she had been coached by her mother and two other persons, who taught her the names of some diseases and popular remedies, and instructed her how to play her part as a healer and soothsayer. In consequence of this she was sent to the Hospital at Lublin, in which she died two years after of anasarca. On examining the brain, there was found to be in the left hemisphere a funnel-shaped depression from the upper surface of the cortex, communicating with the lateral ventricle, which was enlarged, and full of serum. The left hemisphere weighed 406·710 grammes, the right 440·054 grammes, the left hemisphere being lighter by 33 grammes. The convolutions of the left side were flattened, the grey matter pale and œdematous, and on microscopical examination the nerve-tissue around the pons was found to be altered and degenerated in structure. Dr Lambl thinks that the strabismus and the nystagmus were the results of intra-cranial pressure, and that the paralysis of the right side was the result of the cerebral atrophy.

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[1] *Annales Medico-psychologiques*, tome v. 1887, p. 319.

[2] "Ein neuer Fall von Porencephalia," *Vierteljahrschrift für Pract. Heilkunde*, 1861, p. 105 (quoted by Mierzejewski, *op. cit.*).

[3] See *Archiv*, Band xv., Heft 1. Also, my German Retrospect in *Journal of Mental Science*, October 1887, p. 444.

It seems at first sight surprising that Catherine should have been possessed of such unusual intelligence, but we ought to take into consideration that there was no proof that the right side of the brain was diseased; and, indeed, no exact proof that the greater proportion of the left hemisphere was functionally incapable.

ACQUIRED PORENCEPHALY.

The study of this form has yielded even more interesting results, as the symptoms in the better developed brain of the adult have assumed greater distinctness. The opening into the lateral ventricle is owing to a giving way from softening, hæmorrhage, or other lesion of the area of the cortex supplied by the Sylvian artery; sometimes the parts supplied by the anterior or posterior cerebral are involved.

The following is abridged from Kundrat's *Treatise*:—

Dollmatsch Rosa, when 18 years of age and in good health, suddenly became paralyzed on the right side, and also aphasic. The leg improved in strength so that it could be used in walking; the paralysis of the arm persisted. This attack was followed by epileptic fits, which returned every four or six weeks. Later on they became less frequent. A year after, she began to learn to speak again almost like a child. In the last years of her life she suffered from amnesic aphasia. She died at the age of 63 of inflammation in the lungs. On autopsy there was found in the left hemisphere loss of substance in the area of the insula and operculum extending into the left lateral ventricle. The cavity was filled with clear serum, and was lined with a rough brownish thick membrane. The left ventricle was much distended. The third frontal gyrus was in part destroyed and in part contracted; the lower portions of the median gyri and great part of the first temporal were also destroyed. The convolutions around not involved appeared to be healthy, though the convolutions of both hemispheres were somewhat smaller than usual. The left artery of the Sylvian fossa was found to be obliterated. Marks of descending degeneration were observed in the left crus cerebri, the same side of the pons, the pyramids, and in the right lateral columns of the spinal cord. The left corpus striatum and the optic thalamus were almost destroyed.

In the *Allgemeine Zeitschrift*, already cited, there is a most careful study of a case of acquired porencephaly in a woman aged 62 years. The porencephaly dated from an attack of paralysis of the left side four years before her death. Previously she had been in good health. The paralysis was followed by epileptic fits. She became insane, and was sent to the Asylum at Winnenthal, where she came under the care of Dr Kreuser.

On examination post-mortem there was found in the right hemisphere a cavity extending from the middle third of the horizontal ramus of the Sylvian fissure to almost the end of the occipital lobe. The destructive process had implicated the cortex and underlying white matter of the hinder part of the lower parietal gyrus, two-thirds of the first temporal, and the greater part of the occipital lobe. There was found atrophy of the corpus geniculatum internum, and degeneration of the lateral part of the crus cerebri and pons, and thinning and sclerosis of the pyramids of the medulla oblongata down to their decussation. This unusual way of descending degeneration was probably owing to the involvement of the parietal, temporal, and occipital convolutions.

SCLEROTIC IDIOCY.

This form was first described by Bourneville[1] about fifteen years ago. Since then he has carefully worked out its clinical symptoms and its pathology. He regards it as a rare form, and I have not met with many examples, but it seems to be relatively commoner in America. Dr Wilmarth[2] found sclerotic changes in one-fourth of the hundred brains of feeble-minded children which he examined, which he thus specifies: Sclerosis with atrophy was found in 12 cases, sclérose tubereuse in 6, diffuse sclerotic changes in 7, and glioma with sclerosis in 1 case. The predisposing causes of sclerosis seem to be the tubercular diathesis, neurotic tendencies in the progenitors, as shown by insanity, hemicrania, and other neuropathic diseases, and alcoholism. As exciting causes are given accidents befalling the mother before birth, difficult and prolonged labour, asphyxia, and injury to the head of the child after birth. The affection sometimes shows itself in the first few days and generally before the first twelve months, though it may be delayed till the second year, and later. The symptoms which attract attention are repeated spasms, sometimes implicating particular groups of muscles or passing into general convulsions. There is seldom much rise of temperature. There is an exaggeration of the patellar reflex. The frontal and occipital lobes seem to be more often affected than the central ones. Sometimes the convulsions are predominant on one side, which is held to indicate that the sclerosis has invaded the motor cortex. This is followed by loss of power with paralytic attitudes, or hemiplegia more or less decided, and contractions which can generally be undone. This is accompanied by atrophy of the brain and the usual symptoms of idiocy: dulness and apathy are found, inattention to sight and sound, helplessness, lateness in walking and speaking. Sometimes the idiocy is very profound; it may be complicated with blindness. The spread of the affection is indicated by the prevalence of the fits and the increasing mental torpor. The symptoms scarcely ever indicate improvement, though sometimes the march of the disease seems arrested for a year or two. The patient generally dies before the age of puberty.

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[1] *Archives de Neurologie*, tome i. pp. 81 and 397; also, *Recherches sur l'Epilepsie, l'Hystérie, et l'Idiotie*, par Bourneville, Paris, 1882.

[2] See "Report on the Examination of One Hundred Brains of Feeble-Minded Children," by A. W. Wilmarth, M.D., Elwyn, Pa., in *Alienist and Neurologist*, St Louis, October 1890; also, *Twelfth Annual Report of the Committee on Lunacy of the Commonwealth of Pennsylvania for* 1894, p. 114.

DIAGNOSIS.

In the diagnosis Bourneville lays much stress upon the appearance of contractures following repeated convulsions. There is no sudden paleness, no aura nor cry, nor stertorous respiration, as in ordinary epilepsy.

Sclerosis is distinguished from meningitis by the absence of grinding of the teeth, of bursts of rage, of cries of pain, or of boring the head in the pillow. The head is generally small, and sometimes asymmetrical or deformed. The palate is generally normal.

PATHOLOGY.

Several varieties of sclerosis have been described: *sclérose atrophique*, a fibrous kind, composed of hard white masses of shrunken tissue, and tuberous or hypotrophic sclerosis, which is considered the most destructive.

On removing the membranes of the brain, the scattered whitish sclerotic masses are seen elevated above the cortical tissue, which is of a salmon colour. The pia mater is not adherent over the sclerosed masses; sometimes it is over the remaining cortical tissues. The gyri are crowded against one another, so that the separation of the sulci is much effaced. The sclerotic process mainly affects the cortex, though the white matter is sometimes involved. The corpora striata are sometimes affected. The weight of the brain is often rendered unequal by atrophy of one side; Bourneville[1] has noted a case in which the left hemisphere weighed 125 grammes less than the right. In another case the difference was as great as 260 grammes, the right hemisphere weighing 460 grammes while the left hemisphere only weighed 200 grammes. In the atrophic form the shrunken cortex reminds one of the lesions in general paralysis.

Besides the atrophic and hypertrophic or tuberose forms, Bourneville has indicated other subdivisions of idiocy, based upon the manner in which the sclerosed deposits have been diffused through the brain:[2] sclerosis of one hemisphere, of both hemispheres, sclerosis of one lobe of the brain, sclerosis of isolated convolutions, and sclerosis in patches (*sclérose chagrinée du cerveau*). I am not aware how far this physician has defined the symptoms of these varying diffusions so as to enable us to recognise them in the living subject.

I cannot leave this part of the subject without recording how much I am indebted to Bourneville. With incomparable energy this busy physician and medical journalist has found time and means to give a new impetus to the old school for idiots at the Bicêtre, where for years he has carried on a series of studies and formed an instructive museum to illustrate the pathology of idiocy. His researches cover the whole field of idiocy and its allied neuroses. The fourteenth volume of his *Recherches Cliniques et Thérapeutiques* contains some elaborate observations upon hydrocephalic idiocy.

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[1] *Recherches Cliniques et Thérapeutiques sur l'Epilepsie, l'Hystérie, et l'Idiotie*, par Bourneville, Médecin de Bicêtre, p. 222, Paris, 1893.

[2] See *L'Idiotie*, par le Dr Jules Voisin, p. 77, Paris, 1893.

(*To be continued.*)

III.—OPHTHALMIA NEONATORUM, ESPECIALLY IN REFERENCE TO ITS PREVENTION.

By W. G. Sym, M.D., F.R.C.S. Ed.

(*Read before the Medico-Chirurgical Society of Edinburgh, 4th March* 1896.)

There are two points in connexion with ophthalmia neonatorum to which I wish to direct your attention this evening.

The first of these—and on this portion of my subject I shall be very brief—is in regard to its treatment and *medical* prevention. There is a great similarity, but a great number of minor differences between the various applications used in the treatment of the condition. Practically all surgeons and obstetricians seem to be agreed that what should be done is the free washing away of any discharge with an antiseptic solution, and the painting of the inflamed conjunctiva with a stronger antiseptic and astringent. By common consent, nitrate of silver solution is employed for the latter purpose in varying strengths of from 2 to 5 per cent.; but some employ the mitigated (Chevallerau, 1[1]), and a few even the pure (Desmarres, 1) stick. As a lotion, corrosive sublimate is now the favourite; but others used by various surgeons are—chlorine water, which is highly spoken of, and probably with justice, by Burchhardt (2); biniodide of mercury, by Illingworth; quinine, 1·25 per cent., by Reich-Hollender (3); hydrastin (4), and more particularly formol. [The employment of formol for this purpose was, I believe, first advocated by Valude (5), who considers it superior to corrosive sublimate lotion.] Fromaget and Barabacheff (6) employ it in a strength of 1 to 2000 as a lotion, and in a solution of 1 to 200 as a pigment. In the adult the application of these stronger solutions is exceedingly painful. Kalt (1) of Paris warmly recommends Condy's fluid (1 to 5000), and appears to obtain good results, though others do not agree with him; but I suspect the explanation of his success is that by means of a neat little "laveur" he is enabled to attain to a more thorough cleansing of the conjunctival sac than is usually brought about. And this leads me to say that I believe the secret of successful treatment lies very much in this, that, provided your lotion be aseptic and non-irritating, it does not matter so very much what you use if you ensure that the pus is never left in contact with the cornea, and that none is allowed to remain in the conjunctival sac. For the purpose of attaining this end without dangerous pressure on the cornea various instruments are recommended, such as Doyen's (9) red rubber syringe, the Lagrange (8) and other hollow specula, and Kalt's laveur and head of water. There is, however, very little need of inventing instruments for the purpose, for an ordinary hairpin bent in a direction at right angles to its length answers every requirement, and is always to be obtained wherever there is a baby.

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[1] The figures within parentheses refer to References at end of this paper.

For my own part I employ frequent bathing—every two hours, or even every hour in a bad case—with lukewarm corrosive sublimate solution (1 to 6000), free smearing of the edges of the lids with iodoform ointment, and painting with nitrate of silver solution, gr. 10 or 15 to ℥j., every second day.

In regard to the medical prophylaxis, besides washing out the vagina with an antiseptic before delivery, it seems best to wipe the face of the child free of any maternal secretions before any water or antiseptic is applied at all, and while yet the lids are still anointed and protected by the vernix. After this is done, *but not till then*, the eyes should be washed with an antiseptic, and either a drop of nitrate of silver solution instilled according to Credé's plan; or, as Tarnier (7) advocates now, the conjunctival sac should be dusted with iodoform powder. It is scarcely necessary nowadays to point out how very essential some such procedure is, nor to detain you with an account—though it is a very interesting subject—of the immense and beneficial change which has been brought about by Credé and the universal adoption of his methods. The story of that highly gratifying chapter in medicine will be found in Fuchs's *Causes and Prevention of Blindness.* I need only say that Credé and others reduced the proportion of cases suffering from ophthalmia neonatorum from about 10 per cent. to about ·3, or even ·1 per cent. by the use of antiseptic applications (8).

The second point with which I have to deal is the question of prophylaxis in the general. And first let me point out to those who have not studied the subject of ophthalmia neonatorum specially how very serious a matter this is. It has been estimated by different writers and investigators that of all cases of blindness which occur, about 30 per cent., more or less, are due to ophthalmia neonatorum. Some consider the proportion to be higher even than this. Thus Magnus (8) of Breslau says that 34 per cent., Katz (8) of Berlin 41 per cent., and Claisse (8) of Paris, that 46 per cent. of all cases of blindness are caused by this disease, which we must never forget is preventable or curable in 9 cases out of 10, perhaps in 49 cases out of 50.

Silex (9) states that there are 1800 cases of ophthalmia neonatorum in Berlin every year. Most of these, of course, are cured and leave no evil result, but to the blind population of Germany generally there are added 600 persons annually who have lost their sight from this cause.

There are at present in England and Scotland, according to the census returns for 1891, no fewer than 26,264 persons registered as blind; allowing—and it is a very generous allowance—that not 30 but 25 per cent. of these were due to curable or preventable ophthalmia neonatorum, then there would have been at this moment walking about and doing their own proper work, and taking their own proper share in the joy of life and the prosperity of the nation, 6566 men and women, who are thus causelessly doomed to suffer under one of the greatest privations to which we are liable, and who are also more or less unproductive and a money-consuming burden on the community. Nor must the general practitioner turn round upon me and say that we specialists are to blame for this state of affairs, for the truth is that while the results of ophthalmia neonatorum bear so very large a proportion to the other causes of blindness, the cases of that disease brought to us are a mere drop in the bucket. I will not refer to the proportion affected of all children born in lying-in institutions, because, for obvious reasons, that would not be a fair criterion, but I give you the figures respecting all the births in and out of such institutions for a certain town. In the city to which I refer (Breslau), there took place within a certain period of time 12,000 births; 250 children, or 2 per cent., were affected with the disease (10). On the other hand, not more than 1·1 per cent. of all the cases which apply for relief at eye institutions are cases of ophthalmia neonatorum. By the kindness of the President and of Mr Berry I have looked over the records of 6000 out-patients at the Ophthalmic Department of the Royal Infirmary (3000 of the President's and 3000 of Mr Berry's), and found a percentage of only 0·37 of ophthalmia neonatorum. At my own Dispensary in Leith,[1] the social position of the patients attending which is, on an average, much lower, I find in 3000 cases a percentage of 0·7. As, however, I shall have occasion to point out to you presently, I think the proportion in the English institutions is probably a little higher. To this it must be added, that in speaking of the percentage among births I have spoken of *all* births; while in regard to cases reported to specialists I have given you the percentage among hospital patients only, for ophthalmia neonatorum is very rarely seen indeed among the better-to-do classes who consult one privately. From the disparity between the great frequency of this disease in the world and the relative rarity of its coming under the notice of specialists, you will gather, I think, two conclusions, viz., that *we* are not very much to blame for the patients who become blind, and that a very large percentage of the patients must get well either spontaneously or under very simple treatment.

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[1] Now the Eye Department of Leith Hospital.

I have referred to the fact that ophthalmia neonatorum is, in my opinion, commoner in England than it is in Scotland. This is to some extent borne out by the distinct difference in the relative proportion in the two countries of those who have been blind from birth,—for "blind from birth" in the census papers includes not merely the very rare cases of infants actually born without vision, but those much more frequent cases in which sight has been lost during infancy. In England there are 809 blind persons per million, and of these one in every six is blind from birth; in Scotland there are only 695 blind per million, and of these not more than one in 7·7 is blind from birth.

I cannot help thinking—and this is the chief consideration which led me to present this paper to you—that these facts must be taken in connexion with the very much larger proportion in England of births attended by midwives rather than by properly educated practitioners as compared with Scotland. In England, I understand, the proportion of births attended by midwives is rather more than one-half. I am not in a position to give numbers for Scotland, but I do not believe it is anything approaching to that (11). If this be so, then another evil yet has been traced to the action of ignorant midwives, and one which merits careful consideration. It is quite true that some midwives do recognise the importance of this condition, and advise their clients to consult a practitioner; but more than these are careless about the matter, and some are actively hostile to any such proceeding, and oppose it vigorously. It is looked upon by them as a reflection on their success in managing their cases, and they sometimes terrify their patients with a highly-coloured account of what will be the line of treatment employed towards the children. I have taken trouble to verify this myself, and you will find it remarked upon by other surgeons (8). In Schleswig, notwithstanding the fact that it is a punishable offence on the part of a midwife to fail to report a case of purulent conjunctivitis, the Committee of the Schleswig Association, who inquired into this matter, reported that the rule is not carried into operation at all satisfactorily (10).

Can we do anything, then, to bring about here a more satisfactory state of affairs? In certain States there are, as we have just seen, penal enactments directed against midwives who fail to report to proper authorities any case of purulent conjunctivitis in the newborn child. Austria and Switzerland took the lead in this matter in 1865; the midwife is obliged to call the parents' attention to the necessity of seeing a physician, and if they refuse to do so, she is compelled to report the case herself. The result of this has been that Horner was able to state that not a single case of blindness produced by ophthalmia neonatorum had been admitted to the Blind Asylum of Zürich for twenty years thereafter (8). The States of

New York, Maine, and one or two others in America have adopted somewhat similar laws more recently. Thus Dr Howe got passed in the Legislature of New York State the following law :—"Should any midwife or nurse having charge of an infant in this State notice that one or both eyes of such infant are inflamed or reddened at any time within two weeks after its birth, it shall be the duty of such midwife or nurse having charge of such infant to report the fact in writing within six hours to the Health Officer, or some legally qualified practitioner of medicine of the city, town, or district in which the parents of the infant reside. Any failure to comply with the provisions of this Act shall be punishable by a fine not to exceed 100 dollars, or imprisonment for six months, or both" (12).

This law, or one exactly resembling it, is now in force in eleven States of the American Union, representing a population of 28,000,000 persons. The States are—New York, Rhode Island, Maine, Minnesota, Ohio, Maryland, Connecticut, Missouri, New Jersey, Illinois, and Pennsylvania.

Personally I scarcely think that in this country such "grandmotherly" legislation is quite called for, but better education in this respect of those who are to have charge of women during puerperium should be aimed at, as well as the dissemination of knowledge throughout the general population. Several schemes for this purpose have been carried into operation in various countries. The Commission of the Schleswig Association, to which I have referred, agreed, among other matters, to petition the magistrates to issue to all parents registering the birth of a child a pamphlet entitled, "On the Danger of Inflammation of Infants' Eyes: Advice to Mothers who do not wish their children to become Blind."

In Havre a similar procedure is carried out. Fieuzal takes time by the forelock, and wishes an "Avis aux Parents" to be given to each couple registering marriage. Colin wishes instruction in the question to be given in schools, the subject to come in as a branch of tuition under the heading of Anthropology. He admits, however, that it would not do to introduce the subject of gonorrhœa into the higher grade girls' schools!

In May 1885 a deputation of the Ophthalmological Society (13), headed by Mr Jonathan Hutchinson, who was then its President, waited upon a certain high official of the Local Government Board in order to endeavour to induce the Department to issue to all persons registering the birth of a child a printed slip having the following statement: "Instructions regarding new-born infants—If the child's eyelids become red and swollen, or begin to run with matter within a few days after birth, it is to be taken without a day's delay to a doctor. The disease is very dangerous, as if not treated at once may destroy the sight of both eyes." At first it had been also proposed that the registration officials should read these instructions to all persons in charge of women who were being attended when in labour by the medical officers under the poor-law.

There are certain objections to this plan into which we need not enter, but there is less reason to oppose the handing of such a printed slip as was suggested to persons registering births, though it is quite true that very often the advice may come too late for *that* child, and may also occasionally be given to a totally irresponsible individual. Still, what is needed is diffusion of knowledge on the subject, and this plan works in the direction of attaining that end.

And even though Government may not see its way to adopt the suggestion made, more private and local distribution of such slips as have been mentioned has been attempted here and there through the country with good effect. Thus I learn from a paper read before the North of England Obstetrical and Gynæcological Society by Mr Snell of Sheffield (14), that just such a card has been presented at the Sheffield Infirmary to every one bringing a case of ophthalmia neonatorum. And I have received information from Glasgow that a copy of a pamphlet, drawn up by Dr Russell, has for the last considerable number of years been handed to each couple registering the birth of a child. This pamphlet is printed at the expense of the Corporation, and is distributed without extra remuneration by the registrars at all but one of the district offices in Glasgow. I understand that Dundee thinks of following the good example, if indeed it has not already begun to do so.

In conclusion, in the event of the Midwives Bill becoming law, and being extended to Scotland, I would strongly urge that we should take great care that proper instruction be given to the women in regard to this vital point, and perhaps that a penal clause be added to prevent carelessness or improper behaviour in regard to it. And I would also suggest, whether that Bill (about which I express no opinion) becomes law or not, that, through our much respected Medical Officer of Health, the Corporation should be requested to issue a slip or pamphlet such as has been in use in other places. I think myself that the paragraph bearing on this point in Dr Russell's paper is very good, and might be adopted with advantage, but should be more in the form of Mr Snell's slip.

Dr Russell's paragraph runs as follows:—

Eyes.—The first thing to be done on the birth of a baby is to cleanse and gently wash the eyelids and thereabouts. If a baby's eyes run with matter and look red a few days after birth, take it *at once* to a doctor. Delay is dangerous, and one or both eyes may be destroyed if not treated immediately. The discharge is infectious.

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IV.—DIGESTION OF STARCH IN THE STOMACH.

By W. G. Aitchison Robertson, M.D., D.Sc., F.R.C.P.E., F.R.S.E.

Ptyalin is the ferment in the salivary secretion which converts starch granules into achroodextrin, maltose, and glucose. Through the continued action of this ferment maltose is slowly split up into glucose. The amylolytic action of saliva is destroyed by high temperatures, as by boiling; while at low temperatures conversion becomes slow, and ceases entirely at 0° C. At the normal blood-heat (38° C.) starch is converted by ptyalin very rapidly in an alkaline solution. It is said that small quantities of hydrochloric acid suspend and rapidly kill the ferment. On the other hand, it is affirmed that its action goes on in neutral as well as in slightly acid solutions. In strongly alkaline or acid solutions its action very soon ceases.

The question as to the activity of the salivary ferment in acid solutions is of great importance as regards the digestion of starch in the stomach. The ingestion of food into the stomach leads to the secretion of gastric juice. If then hydrochloric acid be poured out early in digestion, the alkalinity of the saliva swallowed will be soon neutralized, and the activity of the ptyalin must soon come to an end in the acid medium.

It is almost certain, however, that the hydrochloric acid secreted in the stomach combines at once with the proteids during the earlier stages of digestion, and so, no free acid remaining, saliva still continues its converting action on starch. This condition lasts for a period varying from three-quarters to two hours; when, the proteids having combined with as much hydrochloric acid as they require, free hydrochloric acid appears in the gastric secretion. The conversion of starch in the stomach then ceases, as ptyalin is destroyed by the acids of the gastric juice in full digestion. There are thus two periods in gastric digestion—(1), when saliva still acts; (2), when pepsin alone is active.

What degree of acidity hinders or kills the ferment ptyalin? Do the various acids differ in their power of destroying ptyalin?

During the earlier stages of mixed digestion, though no free hydrochloric acid is present, the gastric secretion is acid, and this may be due to the presence of lactic acid and acid salts. Does ptyalin still act during this time? If it only acts in alkaline or neutral solutions, then its action will be limited to the time during which food is being masticated and swallowed, and in the stomach only till the alkalinity of the saliva is fully neutralized.

Effect of Normal Gastric Secretion on Amylolysis by Ptyalin.

The following experiments were performed with normal human gastric secretion. After washing out thoroughly the stomach of a healthy man, several ounces of a dilute solution of Caffyn's Liquor Carnis were introduced into it. After the lapse of an hour the contents of the stomach were drawn off, filtered, and used instead of the pure acid solutions in other experiments. The acidity of this gastric fluid was due to inorganic acid, and amounted to 0·15 per cent. hydrochloric acid.

10 c. c. gastric secretion 10 c. c. 1 per cent. starch solution 10 c. c. saliva	At 38° C. = 0·05 per cent. HCl	Starch unchanged after two hours.

This experiment shows that in the stomach with an acidity of the contents less than that even normally present in the gastric secretion, the action of ptyalin is wholly restrained.

Was the ferment merely inhibited from action by the acid, or was it destroyed? To determine this I took equal volumes of this gastric fluid, 1 per cent. starch solution and saliva, and having mixed them, neutralized the mixture carefully with a solution of caustic potash, using very delicate test papers to show the neutral point.

10 c. c. healthy gastric fluid 10 c. c. 1 per cent. starch solution 10 c. c. saliva	At 38° C., carefully neutralized	Starch wholly converted within ten minutes.

On examining the mixture shortly after neutralization the whole of the starch was found to have undergone conversion. It reduced Fehling's solution strongly, and contained 0·22 per cent. of reducing substance. This demonstrates that, with an acidity equal to 0·05 per cent. hydrochloric acid in the gastric contents, the action of ptyalin is restrained.

I performed similar experiments with the gastric fluid from a case of *chronic gastric catarrh*, the acidity of which was equal to 0·067 per cent. hydrochloric acid.

10 c. c. unhealthy gastric secretion	At 38° C. = 0·022 per cent. HCl	Starch unchanged after two hours.
10 c. c. 1 per cent. starch solution		
10 c. c, saliva		

After being neutralized:—

10 c. c. unhealthy gastric secretion	At 38° C., carefully neutralized	Starch completely converted within ten minutes.
10 c. c. 1 per cent. starch solution		
10 c. c. saliva		

After ten minutes the starch was wholly converted, and the reducing substances amounted to 0·23 per cent.

In this case also the acidity of the secretion was clearly the restraining agent. Does the acid merely restrain, or does it actually kill the ptyalin ferment if exposed long enough to its influence? By some authors it is affirmed that the former alone occurs, and that the conversive action of ptyalin again becomes potent on the gastric contents becoming alkaline after passing into the intestine. Others, again, state that ptyalin is actually killed during its stay in the stomach.

Outside of the body I found that the following takes place. I placed in a vessel—

10 c. c. gastric fluid (of an acidity equal to 0·102 per cent. hydrochloric acid)	At 38° C. for one hour,
10 c. c. 1 per cent. starch solution	
10 c. c. saliva	

and kept all at a temperature of 38° C. for one hour. At the end of this time the starch had undergone no conversion. I then neutralized the mixture carefully, and kept it at 38° C. for thirty minutes, when it was found to contain much erythrodextrin and soluble starch, some unchanged starch, and substances reducing Fehling's solution amounted to 0·19 per cent.

In another experiment I left a similar mixture at a temperature of 38° C. for twenty-four hours before neutralizing it. The starch had, of course, undergone no conversion. After being neutralized, it was kept at the same temperature for thirty minutes, at the end of which time it contained much unchanged starch, some soluble starch and erythrodextrin, and 0·09 per cent. of reducing substance. After having been kept for two hours in the warm chamber it gave no coloration with iodine (showing that the starch had been changed into the higher or achroodextrins), and contained 0·138 per cent. reducing substance.

These experiments show that with that degree of acidity found in the above secretions the ferment ptyalin is not killed, but its converting action is prevented. The diastatic action of the saliva seems also to become weaker the longer it is exposed to the influence of the acid, as is shown in the second case, where the ptyalin was exposed to the action of the acid for twenty-four hours. In this case the converting action was feeble and very slow, compared with its action when exposed to the influence of the acid for one hour only.

I am inclined to think, therefore, that as the acidity of the gastric contents increases during digestion, so is the power of the ferment ptyalin diminished, till at the end of digestion it must be almost, if not entirely destroyed, and, I believe, incapable of resuming its function in the small intestine.

The Digestion of Starch in the Stomach.

If to a solution of starch we add a dilute acid and keep the mixture at a high temperature, the starch becomes changed into dextrin and glucose. Are the conditions under which starch is subjected in the stomach favourable to conversion in this manner?

A priori one would not expect that starch could undergo any conversion in the stomach, as the degree of acidity is so feeble and the temperature comparatively low.

From his experiments on Alexis St Martin, however, Smith concluded that starchy food was digested in the stomach independently of saliva, and Brown-Séquard, from his own experience, came to a similar conclusion. Munk and Haycraft have even described a ferment which is sometimes found in the gastric mucous membrane of the pig, and which changes starch into sugar. Brücke found that soluble starch was formed in the stomach to a large extent, and thinks that it is due to the acidity, while the erythrodextrin formed from starch is due to the lactic acid fermentation. The saliva of dogs has only a very slight diastatic action, yet when fed on starch, dextrin and sugar is found in the stomach along with free hydrochloric acid.

On the other hand, Dalton, Kühne, Duclaux, and Schiff deny that starchy matters are digested in the stomach. Foster states that the gastric juice *per se* has no effect on starch whatever. Bouchardat and Sandras found that starch underwent no change in the stomach of rodents. It was only in the small intestines of these animals that dextrin and glucose were formed from starch. In birds they found that starch was much more completely digested, and so in the gizzard dextrin and glucose are found. They think, however, that in the human stomach cooked starch begins to be dissolved. Laborde found that gastric juice had not the same power of converting starch as a solution of hydrochloric acid of the same degree of acidity, and thinks that the acid in the stomach was therefore lactic acid.

If the reaction of the gastric contents be neutral or alkaline, achroodextrin may be formed through the continued action of the saliva. If acid, however (and this only to a small extent), then the conversion which has begun is rapidly brought to a conclusion, and so erythrodextrin may be alone formed.

Von den Velden states that ptyalin acts in the stomach only in presence of weak organic acids, but not if free hydrochloric acid be present also. It has been found, however, that when starchy food is received into the stomach the secretion of hydrochloric acid takes place very early and in a not inconsiderable amount, and remains so till the food passes out of the stomach.

To determine if the gastric secretion *per se* had any effect on starch, I performed the following experiment:—

I. *Healthy Gastric Secretion.*—

I placed 30 c. c. of a 1 per cent. solution of starch in a vessel with 10 c. c. of gastric secretion from a healthy individual (the acidity of the latter was equal to 0·211 per cent. hydrochloric acid), and kept all at a temperature of 38° C. There was absolutely no change in the starch even after the lapse of two hours.

30 c. c. 1 per cent. starch solution 10 c. c. healthy gastric secretion (=0·211 per cent. HCl)	At 38° C.	Two hours later no conversion.

II. *Chronic Gastric Catarrh.*—

With the secretion from an individual suffering from chronic gastric catarrh I performed a similar experiment, and with a similar result.

30 c. c. 1 per cent. starch solution 10 c. c. unhealthy gastric fluid (of acidity = 0·30 per cent. HCl)	At 38° C.	No change after lapse of two hours.

III. *Pernicious Anœmia.*—

A similar experiment was tried in this case, but with different results.

30 c. c. 1 per cent. starch solution 10 c. c. unhealthy gastric secretion (acidity = 0·016 per cent. HCl)	At 38° C	After one hour 0·6 per cent. reducing substance present.

On testing the fluid one hour after, 0·6 per cent. of reducing sugar was present, and this appeared to be the maximum conversion, as the figure remained the same at the end of the second hour. We note, however, that in this last case there was practically no acidity, and the conversion was probably due to saliva swallowed accidentally.

The next experiments were made with starch in the *living stomach.*

I. *Healthy Digestion.*—

After having washed out thoroughly the stomach of a healthy man, 250 c.c. of a 5 per cent. mucilage of starch were injected into his stomach, taking care that saliva was excluded.

After the lapse of one hour the elastic tube was passed, and 72 c.c. of a turbid whitish fluid were withdrawn. The total acidity was equal to 0·22 per cent. HCl, and was composed almost entirely of inorganic acid. The contents consisted of unchanged starch in large amount, tolerable quantities of soluble starch and erythrodextrin, with a trace of reducing sugar—too small in amount for quantitative analysis.

After the lapse of two hours, 56 c.c. of a clear viscid fluid were syphoned off. The acidity was chiefly inorganic, and amounted to 0·17 per cent. There was very little starch present, and no erythrodextrin or sugar. The erythrodextrin and sugar which were present at the end of the first hour had either been absorbed through the walls of the stomach or been passed on through the pylorus.

II. *Chronic Gastric Catarrh.*—

As before, 250 c.c. of the 5 per cent. starch mucilage were injected into the empty stomach.

One hour later 96 c.c. of a whitish fluid were drawn off. The total acidity was equal to 0·127 per cent. hydrochloric acid, and was due chiefly to this acid. Much unchanged starch was present in the fluid, erythrodextrin and soluble starch in small amount, and a mere trace of sugar.

After an interval of two hours, 100 c.c. of a thick whitish-yellow fluid were obtained from the stomach. Organic and mineral acids were present in nearly equal amounts—the total acidity amounting to 0·225 per cent. Here, again, much unchanged starch was present, a small amount of erythrodextrin, and a trace of sugar. The patient felt no discomfort of any kind from this injection of starch solution.

III. *Pernicious Anœmia.*—

250 c.c. of the 5 per cent. starch solution were injected into the stomach of this patient with the same precautions as in the preceding cases.

After the lapse of one hour 41 c.c. of clear thin fluid were withdrawn. The total acidity amounted to 0·01 per cent. as hydrochloric acid. Small amounts of unchanged and soluble starch were present, but no erythrodextrin, and reducing sugar amounted to 1 per cent.

After the lapse of two hours 67 c.c. of thin yellowish fluid were obtained. The acidity was almost *nil*—amounting to 0·0036 per cent. A trace of starch was present, but erythrodextrin and sugar were both absent. Patient had been very comfortable.

Gastric Digestion of Starch.

	Healthy.		Chronic Gastric Catarrh.		Pernicious Anæmia.	
Hours.	1	2	1	2	1	2
Number of c. c. withdrawn.	72	56	96	100	41	67
Total acidity.	0·22	0·17	0·127	0·225	0·01	0·0036
Unchanged starch.	Much.	Little.	Much.	Much.	Small amt.	Small amt.
Erythrodextrin.	Plenty.	None.	Small amt.	Small amt.	None.	None.
Sugar, per cent.	Trace.	None.	Trace.	Trace.	1	None.
Remarks.	Turbid.	Viscid.	Whitish.	Thick.	Thin fluid.	Thin fluid.

A glance at this Table shows that with the acidity of the healthy stomach, or in pathological conditions where the acidity is not diminished, conversion of starch is soon brought to an end in the stomach; whereas in those conditions where the gastric juice has a feeble degree of acidity, the conversion of starch is carried on to a great extent in the stomach, as is shown in the case of pernicious anæmia, where probably amylolysis was carried to its full limit, and the products either at once absorbed or passed on.

In these experiments the starch was introduced directly into the stomach by means of the stomach tube. In this way there was no admixture of saliva except what was swallowed subsequently. The Table shows that in cases where the normal acidity was not lessened, this swallowed saliva had little conversive action on the starch. It likewise shows that even a pure starch solution introduced into the stomach promotes the secretion of hydrochloric acid,—a fact which, on *à priori* grounds, we should not have expected as being inimical to the digestion of amylaceous substances.

From the high degree of conversion which the starch has undergone in the stomach of the patient with pernicious anæmia, I should be inclined to think that this was either due to swallowed saliva or to a conversive ferment secreted by the gastric mucous membrane, as has been described in the stomach of the pig.

The above, however, is not the normal condition in which starchy food is received into the stomach, for it is always mixed up with and accompanied by the products of salivary secretion.

In order to see what changes occur in starch solutions received into the stomach under such conditions, I experimented as follows:—

Combined Effect of Salivary and Gastric Digestion on Starch.

Having thoroughly washed out the stomach, I allowed the following patients to eat slowly a fluid mucilage of boiled starch.

I. *Healthy Digestion.*—

250 c.c. boiled starch solution eaten slowly. Fifteen minutes later I drew off 40 c.c. The total acidity was equal to 0·061 per cent. Starch and erythrodextrin were present in large amount, and reducing sugar amounted to 0·16 per cent.

I carefully neutralized this fluid, and kept it at a temperature of 38° C. to see if any further conversion would take place. After being kept thus for forty-five minutes, no further change had occurred. The ptyalin ferment had therefore in this case been killed by this degree of acidity of the gastric contents, viz., 0·061 per cent. hydrochloric acid.

One hour after the ingestion of the starch solution other 45 c.c. were syphoned off. The total acidity equalled 0·102 per cent.; much unchanged starch was present, with traces of erythrodextrin and sugar.

This also was neutralized and kept at 38° C. for forty-five minutes, and in this case also no further change occurred. These examples demonstrate that the normal acidity of the healthy gastric secretion not only restrains, but soon kills the salivary ferment.

II. *Chronic Gastric Catarrh.*—

1. Patient slowly supped 250 c.c. boiled starch solution. Fifteen minutes later 45 c.c. were withdrawn. Total acidity amounted to 0·138 per cent. Much starch and erythrodextrin were present, along with a faint trace of sugar.

This fluid was also neutralized and kept at 38° C. for three-quarters of an hour, but underwent no further change.

One hour after the injection 38 c.c. were obtained. Total acidity equalled 0·196 per cent. A very small amount of starch was present, but no erythrodextrin or sugar. It underwent no further change after being neutralized and kept at 38° C. for forty-five minutes.

2. Same patient. 250 c.c. starch mucilage supped. After the lapse of ten minutes 80 c.c. of thin white fluid were syphoned off. The total acidity reached 0·102 per cent. Much starch was present, some erythrodextrin, and sugar amounted to 0·4 per cent. When neutralized and kept for three-quarters of an hour at 38° C., the sugar increased to 0·63 per cent.

One hour after the injection 100 c.c. of turbid fluid were obtained. The total acidity was equal to 0·175 per cent. hydrochloric acid. Much starch remained; erythrodextrin was present, and 0·153 per cent. of sugar. After being neutralized and kept warm for forty-five minutes, the sugar remained almost identical in amount (0·154 per cent.).

Combined Digestion of Starch by Saliva and Gastric Juice.

	Healthy Digestion.		Chronic Gastric Catarrh.			
Time, in minutes, of stay in stomach.	15	60	15	60	10	60
Number of c. c. withdrawn.	40	45	45	38	80	100
Total acidity as HCl.	0·061	0·102	0·138	0·196	0·102	0·175
Starch.	Much.	Much.	Much.	Small amount.	Much.	Much.
Erythrodextrin.	Much.	Traces.	Much.	None.	Some.	Some.
Sugar, percentage.	0·16	Traces.	Trace.	None.	0·4	0·153
After neutralization and heating at 38° C. for 45 minutes.	No change.	No change.	No change.	No change.	0·63	0·154

From this we learn that even a short stay in the stomach during the digestion of a simple carbohydrate suffices to kill the ferment ptyalin. This ferment acts with great rapidity, and the amount of starch which was found in the stomach converted into dextrins and sugar had probably undergone this change during the process of mastication and swallowing, and for a very short period after its entrance into the stomach. In the case of the dyspeptic, the ferment was not killed after a stay of ten minutes in the stomach, and was still able to continue its amylolytic action in a less acid medium. A stay of five minutes longer, however, in the stomach, during which time the amount of acid had increased, was enough to kill the ferment, as after being neutralized no further amylolytic action took place.

We may therefore state that the diastatic ferment of the saliva is killed by a certain degree of acidity of the gastric contents (varying from 0·06 to 0·1 per cent. hydrochloric acid), and, depending on the rapidity of the production of this acid, it continues active in the stomach till this limit is reached.

The sugar formed from starch during this period must be at once absorbed in health, as it is not found in the stomach at a later stage in digestion.

Had proteids been present the free acidity would have taken a much longer time to develop, and consequently starch proteolysis would have advanced much further.

This shows, then, that unless starch undergoes the process of mastication most thoroughly, it is not so well digested in the stomach as when it is accompanied by proteid matters. My experiments show that free acidity is soon developed on a purely carbohydrate diet, whereas it is much later when a mixed diet is partaken of.

V.—A CASE OF OSTEOMALACIA TREATED WITH MUCH BENEFIT BY BONE MARROW.

By T. M. ALLISON, M.D., Newcastle-on-Tyne.

(*Substance of a paper read before the North of England Branch of the British Medical Association at Hexham on October* 8, 1895.)

I HAVE pleasure in bringing before your notice to-day notes and photographs of a case of osteomalacia, in which, since the 27th of May last, I have been employing with very satisfactory results a new and original form of treatment.

I need hardly remind you that osteomalacia (a formidable, though fortunately rare disease) presents difficulties, and is of interest to every branch of our profession,—*to the obstetrician*, from the association of the complaint with pregnancy, and the dangers that may arise from it at childbirth; *to the surgeon*, in his general care of the bony framework, and from the advocacy, by some foreign operators, as remedial measures, of oöphorectomy, or extirpation of the uterus; *and to the physician*, from the obscure nature of the lesion, and the hopeless treatment given in the text-books.

The diagnosis of osteomalacia in the patient under consideration rests on a history of insidious onset, with weakness and lassitude in an individual previously well formed and healthy, followed by rheumatoid pains and softening of the bones of the lower limbs, which gave way below the knees, and afterwards failed to support the weight of the body, this being succeeded by softening of the bones of the trunk, and progressive contortion of the framework generally. The upper extremities became involved also, but the outlines of the bones of the head and face have not materially altered. The pelvis is characteristic in that the ischial tuberosities approximate; but this has been allowed, not so much by the pubes becoming rostrate, as by partial dislocation backward of the sacrum. Phosphates in excess were present in the urine.

The patient, M. B., a native of Newcastle-on-Tyne, is a woman aged 43, who suffered from measles when three years of age, and had an attack of scarlet fever when twenty-one. She is the oldest child of poor but healthy parents, both of whom are alive. She was a healthy baby at birth, and was kept on the breast till fifteen months old, this being supplemented from the age of two months, by "boiley" twice a day. She had no marasmus of any kind, but was a fine, good-looking child, walking when eleven months old. Afterwards she became a strong, well-formed girl up to the age of thirteen, when the changes incident on puberty seem to have set up the present disease, which has run a progressive but unusually chronic course.

A sister had her thigh bone broken when two years old, and has a mal-united fracture, which took some two years to unite, showing, perhaps, some family tendency to bone weakness. The rest of the family now alive, seven in all, are healthy. Four died in early life.

The disease commenced when the patient had reached the age of 13, with general weakness and lassitude, followed by rheumatoid pains, and softening of the bones of the right lower limb. The left limb was attacked some months afterwards, and both limbs bending outwards, the patient in three or four years became unable to stand without support, and had to hold on to chairs or other furniture. Afterwards, softening and contortion spread to the pelvis, spine, right upper and left upper limbs in order, and successively the patient had to drag herself about on a chair, then take to crutches, and finally to bed.

The patient states that she was an inmate of the Newcastle Infirmary when 19 years of age, when the legs were so bowed as to prevent walking, and the bones so soft that they could be bent by pressure. Long splints were applied, and some benefit derived, but the patient had to use crutches on returning home. The body and arms were then unaffected.

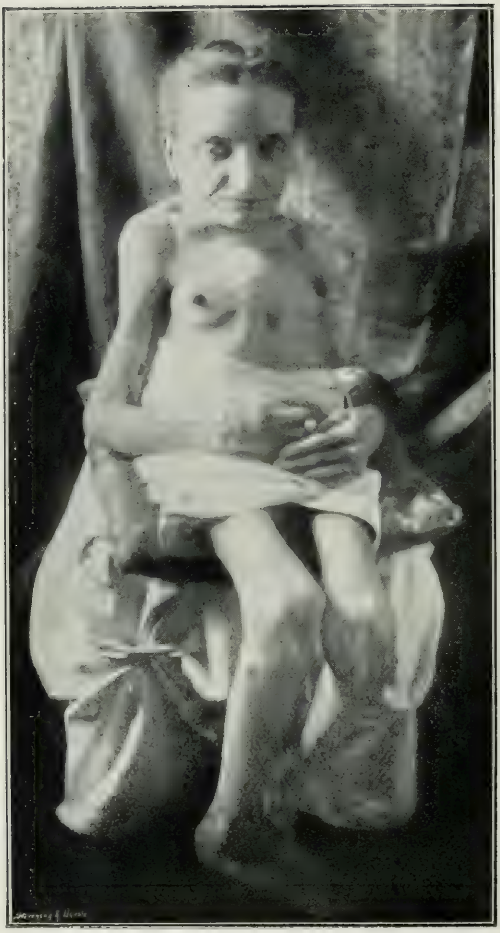
She was again admitted to the Infirmary when 27 years of age, and was in for about a fortnight, her mother objecting to some form of operative procedure. The lower limbs were by this time much worse than before, and severe pain was present in both knees, the rest of the skeleton being normal.

When 30 years old, she became an inmate of the Newcastle Home for Incurables, which she left after a stay of three months, owing to some disagreement with the authorities of that day. While there the better food and surroundings seemed to improve her general condition, and twice she managed to walk across a room unsupported. The pelvis was affected by this time, but the back and body seemed all right, although pain was felt at times in the spine, and the left ribs began to project, probably from commencing lateral curvature.

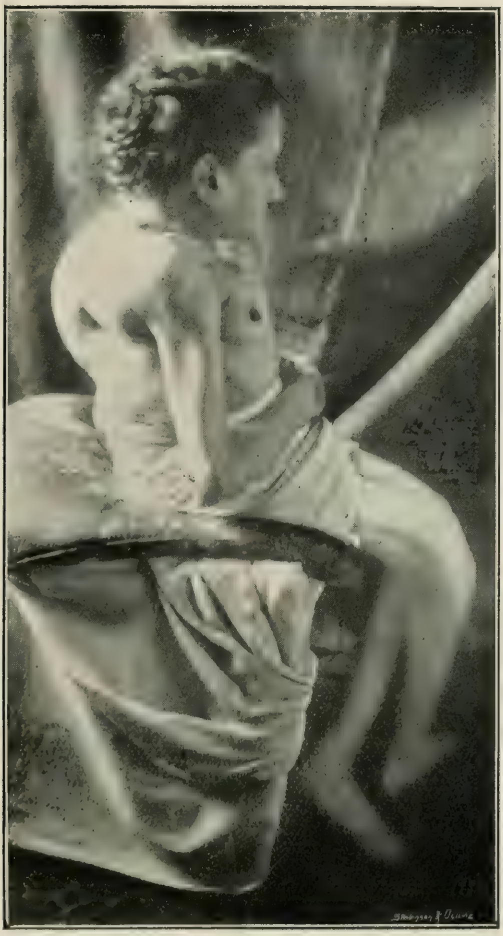
Previous to entering, and since leaving these institutions, the patient was and has been under the care of the Newcastle-on-Tyne Dispensary, and has thus been in receipt of medical charity for about thirty years.

During the last thirteen years, the spine, ribs, and right upper extremity have become affected, while during the last five the sternum, left upper limb, and the cervical region have also become involved. During the latter period the patient has lain almost helpless on her back in bed, with lower limbs rigidly bent at the knees, and crossed the right in front of the left.

Menstrual History.—The patient was first unwell when between 14 and 15 years of age, the flow being accompanied by great pain and difficulty. Since then she has been quite regular, but the periods were always very painful up to the last two years, during



No. 1 A.
Photograph showing general condition of deformity on commencing treatment.



No. 1 B.
Photograph showing condition of spine and position of lower limbs on commencing treatment.

which they have become free from difficulty. The flow has always been profuse, and usually lasts about a week.

Condition on Commencing Treatment.—The Photographs (No. 1, A and B), taken June 5, 1895, illustrate the condition of extreme deformity presented by the patient, a bed-ridden cripple, who had not walked, with few exceptions, for over twenty years, and who had but one serviceable limb, the left upper extremity. *The head* was almost fixed, the chin being nearly down on to the deformed sternum, which was shaped like an S and tilted to the right. Swallowing, respiration, and expectoration were becoming difficult. *The spine* showed marked lateral and antero-posterior changes, there being pronounced lordosis in the cervical and lumbar regions, and marked kyphosis, associated with scoliosis in the dorsal, the lateral curve lying with its convexity to the right. A partial backward dislocation of the sacrum was also present, this position of the bone giving the appearance of a small angular curvature at the base of the spine. *The pelvis* was kyphotic in shape, the soft parts being pushed forward beneath the pubic arch, which, however, was little rostrate, the rami being allowed to approximate from the abnormal position of the sacrum. *The scapulæ,* looking as if crumpled, presented deep depressions in the bodies of the bones below the spines, while the glenoid cavities carrying the heads of the humeri, together with the acromion processes, were carried upward from crutch pressure. *The clavicles* (from the same cause) sloped upwards outwardly, the outer thirds being bent sharply forward on the flat at their junction with the middle thirds. While, therefore, the chin was unnaturally depressed, the shoulders were abnormally elevated. *The ribs* were deformed in three lines, near the sternum, at the mid-point, and behind near the spine. The right chest was rotated backwards, while the ribs on the left side bulged prominently forward and outward from the effect of the lateral spinal curve. *The thigh bones,* much attenuated and curved from the mid line, were rotated strongly outward, the neck of the femur being so compressed that the trochanter was almost in contact with the hip bone, its upper border approaching the anterior superior spine. At the knees the patellæ were dislocated fully their own width to the inner side, and were lying quite clear of the trochlear surface, between it and the inner condyle. *The bones of the legs,* bowed generally outward, were acutely bent just below the knees, and rotated so much inward, that the anterior border of the tibia became the inner, while the articulation of the head of the fibula came round on to the anterior and outer aspect of the limb. *The feet,* curved on the inner and under surfaces, were rotated inward to the utmost extent, the ankle joints being fixed. The right limb was generally the worst of the two, the condition of the knee joint excepted. *The upper extremities* presented a condition of deformity corresponding closely with that seen in the lower limbs, the right arm being much the worst, the shoulder joint being fixed, and passive movement being alone possible at the elbow. The wrist joint was little affected, but the patient had lost the power of sewing during the last ten months. In the left limb most movements were free, except those of the shoulder, where elevation and carrying the arm backward were much restricted, from the alteration of the bony points. The patient could place the left hand on her head, but could get it no higher. The elbow and wrist joint were unaffected. *The bones of the upper arms* (like to a child's in size), were bowed externally, and rotated strongly outward, the head of the right humerus being fixed in an almost dislocated position. *The forearms* presented a tubercle (probably an old greenstick fracture) on the posterior borders of both ulnæ about three inches below the olecranon, marking the place where the bones had bent forward from the patient resting her weight on the edge of a tub when washing herself years ago, while the terminal phalanx of the right index finger was bent backward from the pressure of sewing.

The aspect of the patient was one of suffering, her general condition one of extreme emaciation, the muscular system being almost absent, and little but dry and harsh skin (thrown into folds at the back of the neck and round the waist) covered the skeleton. She has never suffered from bed-sores.

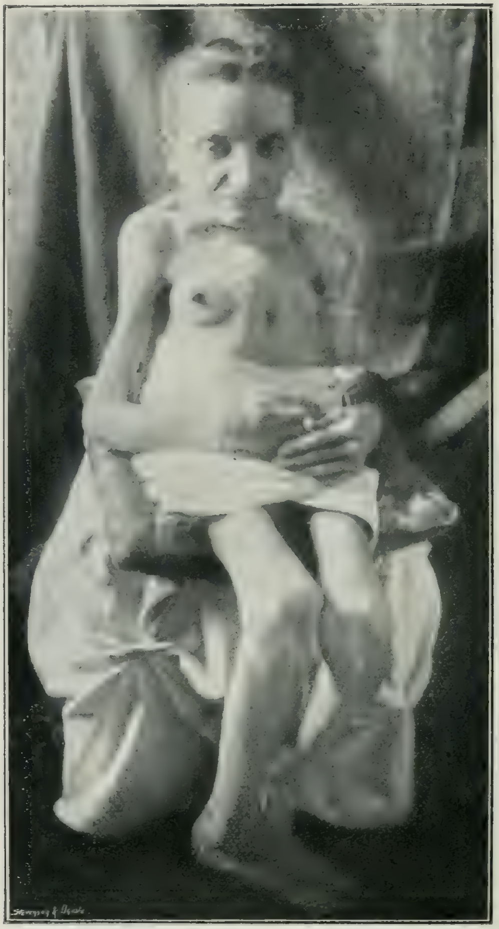
Pain.—Gnawing pains in the affected bones were almost constantly present, with severe starting pains when falling asleep, and the sufferer has often spent the whole night in tears. Pain of a distressing neuralgic character was frequently present in the nasal and frontal regions, while the bones generally were tender on pressure, and suffering was elicited on attempting passive movements of the affected joints.

Teeth.—The lower jaw seems attenuated, and the patient has lost all her teeth, which she states came out usually sound and good, and without pain, sometimes while eating, and sometimes during sleep,—the molars and bicuspids first, then the incisors, and lastly the canine, the left upper canine being the last to go.

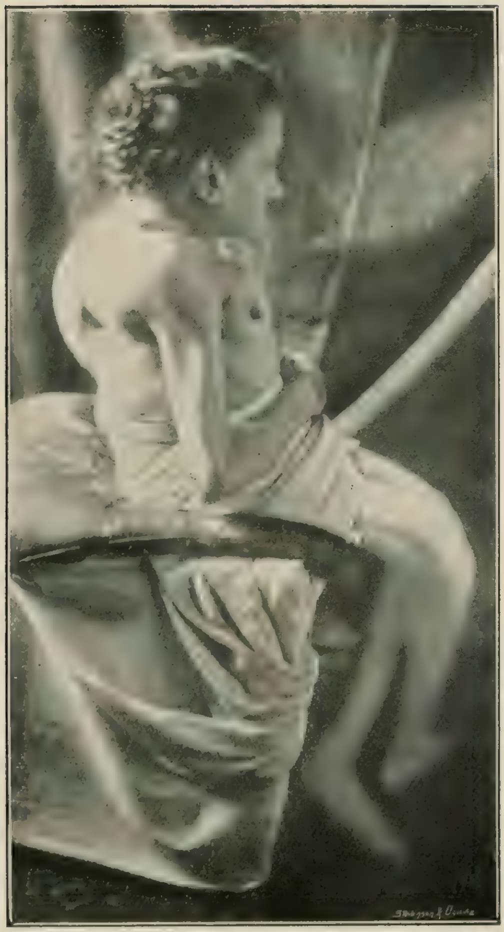
The patient's mental condition (she has not been taught to read) is above the average, though her severe pains tended at times to make her somewhat irritable. Her appetite was poor and her sleep broken.

Urine.—The urine was acid, of sp. gr. 1025, and showed no sugar or albumen to ordinary tests. I did not at first try for Bence Jones' albumen, but have since done so with negative results. Phosphates in large quantity, especially the earthy variety, were, however, present. These results were kindly verified by Dr Bolam of the Newcastle College of Medicine.

The treatment which I was led to adopt was based on pathological considerations, and was commenced on May 27, 1895. It con-



No. 1 A.
Photograph showing general condition of deformity on commencing treatment.



No. 1 B.
Photograph showing condition of spine and position of lower limbs on commencing treatment.

sisted in the administration of healthy bone-marrow, the preparation employed being a glycerine extract from the cancellous tissue of the leg bones of the calf (Brady and Martin). This was given in doses of half to one and a half drachms three times daily after food, the quantity used during the first three months being 4 ozs. weekly. All other treatment was at first suspended. Massage and weights to the feet have been added since, and no change for a time was made in the patient's (limited) diet and (poor) surroundings. Improvement was felt on taking the second dose, "a feeling of warmth going through the bones," and the severe pains (the nasal first, after preliminary intensity) began to gradually pass away, and they entirely disappeared in the course of two months. Visible improvement was seen at the end of the first week, the appearance of the patient brightening considerably, and much more freedom was noticeable in the movements of the head, while expectoration and deglutition became more easy. Deformity also commenced markedly and progressively to disappear, the parts last affected, generally speaking, improving first,—the most striking improvement being shown in the limbs. In the first week the bones of the extremities commenced, and have since continued, to rotate into place, the rigid articulations "going off in cracks" audible to the patient, and to any others in the room, and causing sharp pain, which sometimes passes off quickly, and sometimes lasts for a considerable time. Latterly, most movements towards the normal have become practically painless, except in the spine between the shoulders, in the upraised shoulder joints, and at the compressed necks of the femora, which parts have been most resistant to treatment.

The Photographs (No. 2, A and B), taken August 24, 1895, show the improvement after three months' treatment. Undoubted lengthening of the spine and rotation of the bones of the trunk are seen to have taken place, the ribs being almost equal on both sides, while inspection showed the lateral spinal curve to be dying away, and the scapulæ, sternum, and pelvis to be sensibly approaching the normal type. Consequent on these changes the patient had regained comparatively good use of all her limbs, voluntary activity having returned to all, and she was able to grasp the bed head with her left hand, and touch it with her right, when lying in the old attitude on her back.

In another direction, too, improvement was seen; so much strength had returned to the leg bones that the patient felt they were becoming able to support the trunk; but the hip-joints being so compressed and the patellæ so much displaced, although flexion was free, the legs could not be extended sufficiently to permit of standing. The patient, notwithstanding, could make efforts to regain the upright position. The urine showed a decreased quantity of earthy phosphates, but the total quantity of phosphates was about the same.

The following measurements show the marked change which has occurred in the patient's muscular condition, and, judging from appearances, she has gained nearly a stone in weight.

July 1, 1895.	Aug, 26.	Sept. 8.
The right thigh measured $9\frac{1}{2}$ ins. in circumference, 3 ins. above the knee, and 10 ins. at thickest part.	$9\frac{1}{2}$ and $10\frac{1}{2}$ ins.	$9\frac{5}{8}$ and $10\frac{3}{4}$ ins.
The left thigh measured 10 and $10\frac{1}{2}$ ins.	10 and 11 ins,	10 and $11\frac{1}{4}$ ins.
The right upper arm measured 5 ins. in circumference at mid-point,	$5\frac{1}{2}$ ins.	$5\frac{5}{8}$ ins.
The left arm measured $5\frac{1}{2}$ ins.	rather over $5\frac{1}{2}$ ins.	$5\frac{7}{8}$ ins.

The case presents the following points of interest:—

1. The early onset and chronic course of the disease.
2. Its being associated with puberty, but not with pregnancy.
3. There being great deformity, but no true fracture of the bones.
4. The pelvis having given way behind rather than in front.
5. The association of extreme kyphosis with marked lateral curvature.
6. The general course of the disease from below upward, most marked in the right limbs, and the correspondence of deformity in the upper and lower extremities.
7. The striking effects of the treatment, and the tendency of the skeleton, under its influence, to revert, without the aid of the muscular system, to the normal type.

In conclusion, in view of the terrible condition of patients suffering from this formidable disease, and as an alternative to the drastic procedure of oöphorectomy, with or without removal of the womb, I trust I am justified in bringing this promising form of treatment before the notice of the profession.

Note on December 31, 1895.—Satisfactory progress still characterises this case, deformity (here and there little by little) having steadily gone down during the last four months. The old pains have disappeared. Satisfactory movement has returned to the joints where rigidity formerly existed, and the accumulated deformity of thirty years is slowly melting away, the shoulder and hip joints, though improving, yielding least. To-night the patient dressed herself, sat up in a chair, and saw the old year out and the new in, and spoke of the contrast of a year ago, when she was almost helpless, suffering pain the whole night, and wishing she might not see another year.

The marrow treatment, in the same form and quantity, has been steadily persevered in, except that in December I substituted tabloids for the glycerine extract, and the solid form seems (as in other animal extracts) to have more therapeutic value than the liquid preparation.

Massage (for which I am indebted to the kindness of Sister Ethel of the St James's Nursing Society) has also been of much service in improving the muscular powers of the patient.

Finally, I may add that, struck by the results in osteomalacia, I have extended the marrow treatment to the following cases of bone deficiency or deformity:—

1. General bone weakness and deficiency, due to premature birth, in a child three years old. Here much osseous and general improvement has followed the treatment.

2. Angular curvature of the spine, due to rickets, in a child three years old. Here some little lessening of the curve is, I believe, the result of the treatment.

3. Old-standing, non-suppurative, curvature of the spine (tubercular). Here the marrow has acted as a good general tonic and hæmatinic, and has had some little effect upon the outlines of the spinal mass.

VI.—CONGENITAL TEETH, WITH THREE ILLUSTRATIVE CASES.

By J. W. Ballantyne, M.D., F.R.C.P.E., F.R.S.E.

(*Read before the Obstetrical Society of Edinburgh*, 11*th March* 1896.)

In the month of January 1894 I met with a case of congenital teeth in my practice; during the latter half of 1895 Dr Vargas of Barcelona was good enough to place at my disposal his notes upon a very instructive case of extra-alveolar dental sac in a new-born infant; and quite recently my friend Dr R. C. Buist of Dundee has been so kind as to furnish me with the details of a child born at the full time with two incisor teeth already "cut." From the consideration of these three instances of precocious dentition, and from a survey of similar cases which have been reported by various observers, it will be possible to draw some conclusions regarding the nature and mode of origin of the anomaly. Since the observation recorded by Dr Vargas had several peculiarities which were of quite unusual interest, it may be presented first; I give the report almost in the very form in which it reached me.

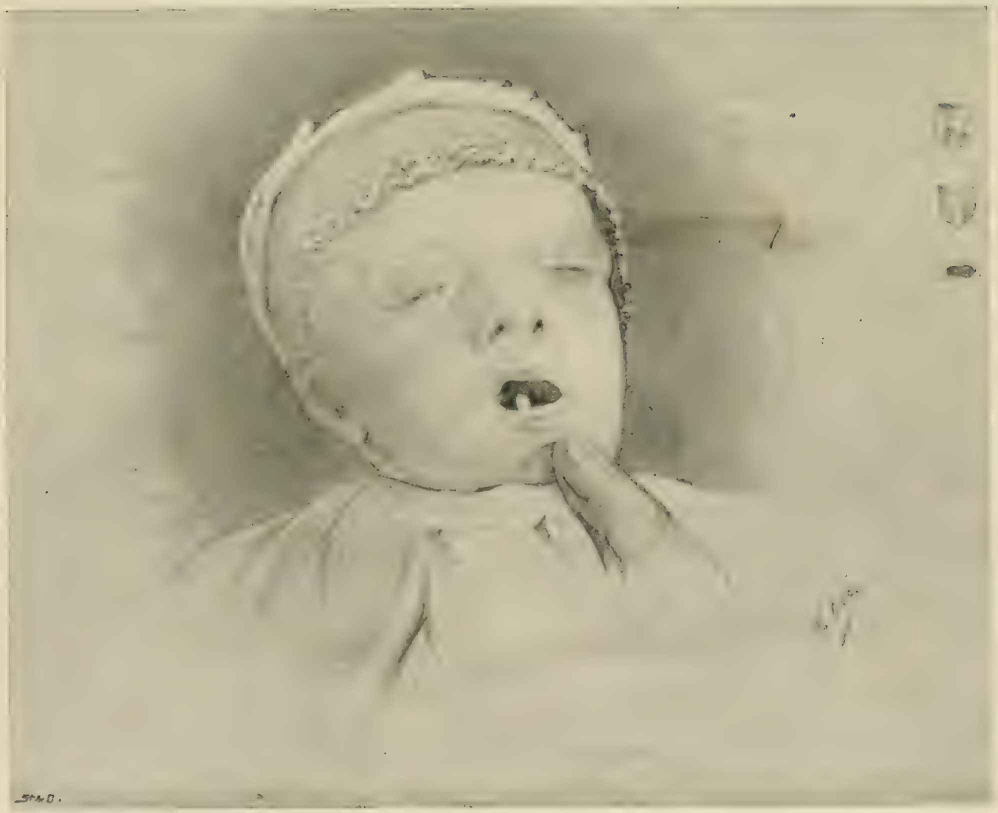
1. A Case of an Extra-alveolar Dental Sac in a New-born Child.

The case which is described by Dr Andres Martinez Vargas, Professor of Diseases of Children in the University of Barcelona, was met with by him in his Pediatric Clinic, to which it had been sent by Dr Bonet Amigo, Professor of Diseases of Women and Practical Obstetrics in the same University. It was of special interest, because at first sight it was thought to be a congenital neoplasm of the gums, but during its removal by operation it was discovered to be a premature tooth enclosed in an extra-alveolar sac.

The child, a boy, was born on the 13th of October 1895, under very good conditions. The mother noticed at once that the infant could not take the breast, partly because he was unable to close his mouth, and partly on account of marked tongue-tie. Dr Vargas examined the boy when two days old, and found in the lower jaw and a little to the right of the middle line a marked projection covered with the buccal mucous membrane (*vide* Plate). It had a cylindrical form, rather flattened from before backwards, and was of uniform consistence. It measured 4 mms. in length, 2 mms. in width, and had an antero-posterior diameter of 1·5 mm. It had its origin in the upper border and posterior surface of the lower jaw, in the position corresponding to the central incisor of the right side. In appearance and colour it exactly resembled the rest of the mucous membrane. It was of hard consistence, resembling cartilaginous or fibrous tissue. Its direction was upwards and rather forwards; but on attempting to close the mouth the projection came against the upper jaw and thus interfered with the coming together of the lips; the child was, therefore, unable to grasp the nipple. It had a broad base and was movable. The frænum linguæ was abnormally large and strong.

Seeing that it was necessary to enable the child to perform the act of sucking, Dr Vargas at once cut away the frænum. On the following day he operated for the removal of the projection from the lower jaw. It was found to be more movable than when first examined, and its upper border showed an erosion due to its rubbing against the upper jaw. Since it was regarded as a neoplasm, Dr Vargas, after anæsthetising the gum with a solution of cocaine, proceeded to remove the projection with a probe-pointed knife. While cutting through the base he noticed that something white and hard like bone could be seen on the top of the projection. He then found on close inspection that it was a tooth. The operation was completed by means of curved scissors, and the wound was afterwards touched with an astringent solution. The hæmorrhage was very slight. The child was then able to suck quite easily, and the result of the operation was therefore quite satisfactory.

The peculiar interest of the case consisted in the fact that the tooth was quite covered by the mucous membrane. It was also movable at its base, and was not, therefore, a premature tooth firmly fixed in its alveolar cavity, but one without a fang enclosed in its dental sac, which in this instance was extra-alveolar. Close examination showed that its covering was composed of two principal layers,—an outer one, consisting of the buccal mucous membrane, and an inner layer of very vascular connective tissue, which formed the external layer of the dental sac. The tooth, when extracted, appeared to be composed of the enamel and of the dentine which constitute the cavity of the pulp. There was no root or anything like one. Dr Vargas, therefore, suspected that the calcification of the tooth had been interrupted, and that this accounted for its mobility from the very first. He would place it in that group of premature teeth in which a lesion of the embryonic tissue interferes with the formation of the fang. It is right to remove such teeth



Dr Vargas' case of Extra-alveolar Dental Sac.

in order to facilitate the act of suction; the operation is easy and free from danger.

2. CASE OF TWO INCISOR TEETH IN A NEW-BORN INFANT.

In January 1894 I attended Mrs A., 40 years of age, in her second confinement. During the weeks immediately preceding the full time she suffered from influenza. Forceps were needed on account of uterine inertia, due to the presence of a subperitoneal fibroid situated near the fundus uteri. The infant, a male, was small and feeble at the time of birth. He was brought up on the bottle, as the mother was unable to nurse. A few days after his birth my attention was drawn to his mouth, and there in the lower jaw were the two central incisors. They could be easily seen and felt, although they were thin scales and only projected about $\frac{1}{8}$ inch above the gums, which, it may be mentioned, seemed somewhat atrophic. The teeth had not the normal bright white appearance, but resembled in their characters teeth discoloured by the use of iron tonics. They were slightly movable, but as they did not cause the infant any annoyance they were not extracted. According to the mother's statement they were absorbed, and two new central incisors appeared in their place about the seventh month; but it is more probable that they dropped out as the new teeth forced their way to the surface. The child was and is quite healthy; but his elder brother died of tubercular meningitis at the age of 3 years, and there are signs of phthisis in another member of the family.

3. CASE OF CONGENITAL TEETH.

For the notes of this case I am indebted to Dr R. C. Buist. They are as follow:—The child, a male, was born at the full term on December 18, 1893. It was at once noticed that the two lower central incisors were already "cut." Both projected distinctly above the gum, the right one about 2 mms., the left rather less. They could be rocked backwards and forwards. The gum at the roots was swollen, and its edges, both before and behind, were slightly everted. The eversion became distinctly less in the course of a few days, and the teeth were rather more firmly held. Both teeth came out during the first month of life, and have not been replaced, although the dentition is otherwise normal. It was stated that the teeth felt soft in the hand, "like gristle." The child is healthy, and has been bottle-fed. He was illegitimate.

CONGENITAL TEETH.

Historical Notes.—That infants are occasionally born with one or more teeth already cut is a fact which was well known to the ancients. The meaning which was ascribed to such occurrences may be learned from the following passage in Pliny's *Natural History*, which I give in the words of Holland's *Translation* (2)[1]:—

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[1] The figures within parentheses refer to Literature at end of paper.

"Certaine it is also, that some children are borne into the world with teeth, as *M. Curius*, who thereupon was surnamed *Dentatus*, and *Cn. Papyrius Carbo*, both of them very great men and right honourable personages. In women the same was counted but an unluckie thing, and presaged some misfortune, especially in the daies of the KK. regiment in Rome: for when *Valeria* was borne toothed, the wizards and soothsayers being consulted thereabout, answered out of their learning by way of prophesie, That looke into what citie she was carried to nource, she should be the cause of the ruine and subversion thereof: whereupon had away shee was and conveyed to Suessa Pometia, a citie of that time most flourishing in wealth and riches: and it prooved most true in the end, for that cittie was utterly destroyed."

From this extract it may be gathered that congenital teeth in a male child were regarded as a good omen, but as a bad one if the infant was a girl. Instances illustrating this belief may be cited from various medical writers; thus Polidore Virgil (3), in his work *De Prodigiis*, reported that in the year 1456 an infant with six teeth was born; the sex of the child was not stated, but surely it must have been a girl, for Virgil went on to say that at that time the Turks began to invade our lands. The same case was referred to by Lycosthenes (4) in the following words:—"In agro Piceno eodem tempore ortus infans dentibus sex, facie insolitae magnitudinis, futurae calamitatis, quae postea secuta est magna profecto indicia."

Weinrichius (6) in his quaint old book, published in 1595, devoted part of a chapter to toothed and bearded infants ("infantes barbati et dentati"), and placed Zoroaster with Marcus Curius as historical instances of premature dentition; he ventured also to find a cause for the anomaly in the determination of a large quantity of semen of great vital activity to the spot where the teeth are formed. J. Schenkius (8) referred to the cases already mentioned, and added three others from the works of Livy (1), M. Donatus (5), and Benedictus (7). Marcellinus Ammianus, the historian, spoke of an infant born near Antioch in 359 A.D. which had two mouths, two teeth, a beard, and four eyes. The occurrence was believed to presage evil to the Republic.

During the seventeenth century some further instances of congenital teeth were recorded; and M. Schurig (15) in his *Embryologia historico-medica*, published in 1732, was able to present to his readers a group of observations which included those of Crausius (14), Hellwig (10), Ludovicus (12), Rhodion (9), Göckel (13), and the others which have been named already. Thomas Bartholin (11), writing in 1654, thought that in the presence of such dental anomalies was to be found the cause of the *vagitus uterinus*. J. Graetzer (18), writing about a century later than Schurig, added nothing further to our knowledge of congenital teeth beyond the remark that Carus had collected some additional cases.

During the last fifty or sixty years numerous observations have been made upon instances of congenital teeth, many of which have escaped indexing from the obscure and brief manner in which they have been recorded. Some references were collected by Dr Vargas in connexion with his case above recorded, and I have added considerably to the list; but doubtless many instances still lie hidden away in text-books and medical and dental journals. From the references which have been gathered together it will be seen that the presence of teeth, especially of lower incisors, at birth is not an unknown occurrence, as Blot had thought (*Bull. Soc. de Chir. de Paris*, p. 185, 1868); at the same time the phenomenon is far from common, for many obstetricians have never met with a single instance of it.

It would not be right to close this historical sketch without a reference to the famous personages in English and French history who are popularly believed to have been born with teeth. These were Richard III., Louis XIV., Richelieu, Mirabeau, and Mazarin. That Shakespeare was acquainted with the belief that Richard III. was a dentate infant is borne out by several passages in his works. Thus, in *King Richard the Third*, Act ii., sc. 4, the Duchess of York says,—

> "Marry, they say my uncle grew so fast
> That he could gnaw a crust at two hours old;
> 'Twas full two years ere I could get a tooth."

Also in Act iv., sc. 4 of the same play, Queen Margaret says,—

> "That dog that had his teeth before his eyes."

And in *King Henry the Sixth*, Part III., Act v., sc. 6, the following words occur,—

> "Teeth hadst thou in thy head, when thou wast born,
> To signify, thou cam'st to bite the world."

And Richard himself says,—

> "For I have often heard my mother say
> I came into the world with my legs forward:
>
> . . . .
>
> The midwife wonder'd and the women cried,
> *O Jesus bless us, he is born with teeth!*
> And so I was; which plainly signified,
> That I should snarl, and bite, and play the dog."

With the story of the birth in Germany of an infant with a golden tooth we need not here concern ourselves; it was supposed to indicate the near approach of the Golden Age, and doubtless the story had as much truth in it as there has been fulfilment of the prediction based upon it.

Frequency.—There can be no doubt that congenital teeth are rarely met with. Out of 17,578 new-born infants at the Paris Maternity between 1858 and 1868 only three had teeth, or not much more than one in six thousand. Out of 500 cases, collected by Magitot (35), in which the time of eruption of the first tooth was noted, in only one were there teeth at birth. In 20,000 births Blot said he had never seen an instance; whilst, on the other hand, Besnier and Gueniot regarded them as very common. Neither experience can be regarded as usual, and the truth lies doubtless between the two extremes. In the present paper some seventy observations have been gathered together from literature, and doubtless not a few have escaped notice.

Clinical History.—The history which is usually given in cases of congenital teeth is that at the time of birth the doctor or nurse, having occasion to put a finger in the infant's mouth, discovered the anomaly, or that some hours or days later the mother became aware of the unusual state of matters through the wounding of her nipples by the teeth of the child during nursing.

The pregnancy of which the dentate infant was the result seems generally to have been uneventful. Occasionally, however, it terminated prematurely: at the sixth month in the observation of Crausius (14), at the seventh in Hellwig's case (10), and "prematurely" in that of Lamm (25). In the case seen by me (65) the mother had influenza during the last weeks of gestation, and in a few other instances the maternal health was not good. The fact that the mother of the dentate infant seen by Flesch (58) had had ten teeth and roots extracted in the third month of her pregnancy must be regarded solely as a curious coincidence, as must also the statement that the mother in No. 59 dreamed of the birth of a toothed infant the night before labour began.

In most of the recorded cases there was no history of malformations or of congenital teeth in the parents; but Nos. 31 and 60 were striking exceptions. In the remarkable instance cited by Mattei (31) the infant's mother had also been born with a tooth; and in Limrick's recently reported case (60) the woman had two teeth at birth, her second child, a boy, showed the same anomaly, and her sister's first child, a girl, also came into the world with two lower incisor teeth.

The parents seem generally to have been healthy, but in No. 33 the mother was slightly strumous, in No. 32 there was a family history of tubercle on the father's side, and in No. 65 an elder brother of the infant died of tubercular meningitis. These three cases, however, form the only evidence in favour of the association of premature development of the teeth with a tubercular family history.

Symptomatology.—So far as sex is concerned the tooth-bearing new-born infant has been male nearly as often as female: in fifteen cases (Nos. 9, 10, 24*b*, 29, 35*a* and *b*, 36, 37, 53, 57, 59, 60*b*, 64, 65, and 66) the infant was a boy; in seventeen cases (Nos. 5, 11, 12, 14, 21, 23, 24*a*, 31, 32, 33, 34, 40, 48, 56, 60*a* and *c*, and 63) a girl.

In the vast majority of cases the premature teeth were incisors, usually central, of the lower jaw (*e.g.*, in Nos. 10, 14, 21, 22, 23, 25, 26, 31, 33, 35, 36, 40, 41, 43, 47, 48, 50, 54, 57, 58, 60, 64, 65, and 66). Where one of the lower central incisors was present at birth the other sometimes made its appearance two or three weeks later (*e.g.*, No. 57). In a few cases the congenital tooth was an upper incisor (Nos. 27, 30*b*, 34, 52, and 62), and in two of these instances the occurrence was associated with a cleft palate and inter-maxillary bone (Nos. 27 and 62). In one or two observations there were incisors in both jaws: thus in No. 12 it was so, and curiously enough the result was the transfixion of the tongue thereby, here also there was harelip; and in No. 30*a* there were upper and lower central incisors. More rarely were molar teeth present at the time of birth: this was the case, however, in Bartholin's observation (No. 11) in which there were two molars, and in Jacobi's (No. 42). In the infant seen by Thomas (29) there were nine teeth (incisors and molars) seen at birth, in Bouchut's case (37) there were two lower incisors and one molar, and in Kaufman's (59) it was said that there was a "full set of teeth in the upper and lower maxillæ." In a cyclopian fœtus described by M'Lin (61) it is stated that "the mouth contained an ivory tusk-like tooth in each corner," and in one or two instances (*e.g.* Nos. 3, 5, 9, etc.) the nature of the teeth is not recorded.

A reference may be made in passing to the curious belief that the *vagitus uterinus* occurred in infants born with teeth: the notion is thus expressed by T. Bartholin (11), "incitantur ad vagitum ob doloris quemcunque sensum, sive uteri angusti, sive dentium prurientium, sive extinctae matris."

In some cases the teeth seem to have given rise to no trouble even when the mother herself nursed the infant; but in the majority of at any rate the recorded instances they apparently acted like foreign bodies in the child's mouth, besides causing injury to the maternal nipples. In several observations the statement is found that the little patient was unable to draw the breast properly, and so, getting little milk, began to waste away and was in danger of death. In such cases the removal of the offending teeth usually led to complete recovery, and in Levison's report (21) the improvement following their extraction was described as "marvellous." The teeth interfere with nursing both by causing the mother pain and by preventing the perfect suction due to complete closure of the mouth of the infant.

In a few instances the teeth gave rise to ulcerations on the lower surface of the tongue. This was specially well-marked in Besnier's case (40), in which, at the age of three weeks, coryza came on, accompanied by frequent sneezing, with the result that the sharp dental borders caused a sub-lingual ulcer very closely resembling that so often seen in whooping-cough. Similar ulcers were produced in Nos. 33, 41, and 48; and the mucous membrane of the lip or gum was sometimes affected in like manner (*e.g.*, No. 52).

It is seldom that the later history of infants born with teeth is forthcoming, so that the general symptomatology is little known.

It would seem that the premature teeth, often loosely implanted to begin with, usually fall out or are pulled out in a short time after birth: at fifteen days in No. 32, in six weeks in one of Billard's cases (17), and in two months in No. 30. In such instances their places remain unfilled until the commencement of the second dentition; thus in one of Hutchinson's cases (23) two lower incisors removed soon after birth had not been replaced at the third year; but occasionally the teeth seem to have been supernumerary as well as premature, and are replaced by the regular milk teeth (30*b* and 65). In other instances they do not fall out but remain *in situ*, the others of the first dentition growing in around them: the father of Tissier's patient (34) said that at the age of *six* months the girl had all her temporary teeth, which were still to be seen at seven years; in Besnier's case (40), on the other hand, the rest of the eruption was slow and also irregular, the first molars appearing before the lower lateral incisors; and in one of Mattei's observations (31*b*), a girl 5 years of age, two lower incisors cut at birth were still present, and all the first set had been visible at sixteen months. In such cases the congenital teeth may be recognised by their small size. A very curious after-history was that reported by Stocker (56); he noted the case of an old lady who had been born with three or four teeth, and who, at the age of 75 years, cut a double tooth. Unfortunately sufficient records are not forthcoming to enable us to determine whether later anomalies in dentition (as to time or order of eruption, etc.) are or are not associated with the presence of congenital teeth.

So far the local symptoms only of this dental anomaly have been considered; but according to certain writers general conditions may also be associated therewith. The majority of dentate new-born infants seem to have been delicate; at any rate many of them died soon after birth: at the seventh week from pneumonia in No. 33, at the same age from hæmorrhage following extraction of the teeth in No. 35, and at three months from infantile atrophy in No. 36. Other cases were delicate at first, and began to suffer from diarrhœa and atrophy, but recovered after the extraction of the teeth. In yet other instances (*e.g.*, Nos. 31, 32, 34, 57, etc.) the patients seem to have been quite healthy and robust.

The hæmorrhage which followed extraction in Magitot's case (35) must be ascribed to hæmophilia, although a hereditary history of the malady was wanting; it was most persistent, recurring on four separate occasions, and proving fatal, in spite of energetic measures, in about three weeks. This, however, would seem to be the only instance in which such a disastrous result followed the extraction of congenital teeth; generally they are quickly and easily drawn and leave no ill effects.

Some writers have seen in this dental anomaly an indication of a tubercular tendency, and in two or three of the recorded cases, including that seen by me (65), this idea received some support;

but in the great majority of the observations there was no reference to any such predisposition. It has also been stated that the condition is associated with early closure of the cranial sutures and fontanelles (No. 45); but Jacobi (42) has never noted this, and Forchheimer (55) affirms that large fontanelles and diastatic sutures are quite as common. The possible association of early dentition and of an excessive development of hair has also been dwelt upon by some observers: in a female infant seen by Bartholin (11) there was a tuft of yellow hair on the left cheek as well as two congenital molars, and in one of the cases referred to Schurig (15) the presence of hair and teeth was noticed; but in recent observations there is little or nothing in support of this view.

There does not seem to be any correlation between mental activity and the presence of congenital teeth. Mattei's second patient (31*b*), a girl 5 years of age, was certainly precocious as regards her intelligence; but this is almost the only record of such an association. Probably the idea has been handed down from the time of Pliny (2), and has nothing but an historical interest. On the other hand, defective mental action does not seem to be associated with premature eruption of the teeth any more than precocity of intellect. It cannot, in fact, be said that the dental anomaly has any prognostic value in estimating either mental or bodily vigour.

Morbid Anatomy.—Already some reference has been made to the characters of the congenitally erupted teeth. Usually they are but poorly developed. The absence of a root or fang has been often noted (*e.g.*, Nos. 23, 37, 42, and 48), and in some instances the enamel has been described as thin and imperfectly formed. Levison's observation (21) was quite peculiar in these respects, for in it the teeth were in a normal state as regards both the dentine and enamel, for the crowns as well as the perfect fangs were covered with well-formed enamel. In a few other cases the teeth were firmly fixed in the jaw, were white in colour, and had a firm consistence; but in the great majority they were quite movable, rocking backwards and forwards on the gum, lacked the bright white appearance of normal teeth, and had a softer feeling than usual.

Morbid conditions of the dental follicle were not uncommonly met with, and were of the nature of inflammation, ulceration, and even of gangrene; indeed, in one group of cases the premature eruption of the teeth was put down to these intra-follicular accidents.

In rare cases other malformations and anomalies were present in addition to the dental one. There were several facial and cranial defects in Bartholin's specimen (11); whilst in those seen by Ludovicus (12), Burdach (20), Melander (27), and Rotch (62), there was cleft palate, and in Vargas' case (64) there was a tongue-tie. The association of cyclopia and congenital tusk-like teeth (61) is probably quite accidental.

The observation of Vargas (64) had an exceptional morbid anatomy. In it not the tooth only, but the whole dental sac was extra-alveolar; it might be correctly named ectopia of the dental follicle. Dr Vargas at first regarded it as a neoplasm growing from the gum, and its true nature was only revealed during the operation for its removal. A case which closely resembled it has been recently put on record by Givel (63): a female infant, with three brothers with congenital inguinal hernia and one with hypospadias, showed on the lower jaw, just behind the lip, a cylindrical growth as large as the tip of the little finger; it had the colour of the buccal mucous membrane and a firm consistence, and was divided transversely into two parts by a slight groove. The growth was removed, and found to be a granuloma or a sarcoma in the first stage of development. Three days later an incisor tooth appeared in the position of the tumour, and was also removed; and now at the end of six years all the incisors are present, so that the one which was taken away must have been supernumerary. It is doubtful whether we can regard the cases of Vargas and Givel as identical in their pathology, but that they show some similarity, and may even be different stages in the same process, seems very probable. They are, at any rate, quite unlike the usual cases of congenital teeth.

Pathogenesis.—All cases of congenital teeth do not admit of the same explanation, and it would seem that there are several ways in which their pathogenesis may be explained. Such a case as that reported by Vargas (64) is truly a malformation, and may be regarded as a displacement, an ectopia, of a dental sac, and possibly of a supernumerary one. It cannot therefore, strictly speaking, be regarded as an instance of premature eruption of a tooth.

The more ordinary cases of antenatal cutting of the teeth may be explained in various ways. Through the imperfect development of the tooth, and the absence of a fang to fix it deeply, it may more rapidly reach the surface of the gum and be extruded, soon to fall off on account of its rootless condition. In other cases, through the excessive development of a tooth or a too early deposit of calcareous material in it, the same ultimate result may be arrived at. Again, through an atrophic state of the gum, the tooth may be exposed before the natural time. Finally, intra-follicular inflammation may push a tooth upwards, whilst ulcer on the gum exposes its crown, and so this sort of eruption of it takes place. In one or other of these methods congenital teeth may arise, and possibly in some instances several of the pathogenetic factors are at work at the same time.

Treatment.—From what has been already said an idea of the treatment of congenital teeth will have been gained. Where the tooth or teeth give rise to trouble during lactation, either by wounding the nipple or by preventing the complete closure of the infant's mouth, removal with a small pair of forceps is indicated. This is usually easy of accomplishment, for they are seldom firmly fixed, and the danger of hæmorrhage from the socket, of which so much is made by Magitot (35), cannot be regarded as other than extraordinarily rare. Where also the teeth are freely movable, and are the cause of sublingual or buccal ulcerations, they ought likewise to be taken away. If, on the other hand, they give rise to no trouble they may be left *in situ*, for if removed there is always the possibility that other temporary teeth may not take their place, and so a gap be left till the period of the second dentition. In some cases they drop out of their own accord and do not need to be drawn.

General Conclusions.

1. Congenital teeth form a rare anomaly, but one which has long been known both to the profession and to the public.

2. Their presence has often an ill effect upon lactation, partly on account of the imperfect closure of the infant's mouth, and partly by the wounding of the mother's nipple; sublingual ulceration may also be a result, and infantile diarrhœa and atrophy are more distant consequences. Sometimes, however, symptoms are altogether absent.

3. Congenital teeth have probably little or no prognostic significance as regards the bodily or mental vigour of the infant carrying them.

4. The teeth usually met with are lower incisors, but sometimes upper incisors may be seen, and very rarely molars of either the upper or lower jaw. Other facial or buccal malformations may occasionally be met with.

5. They are caused by the premature occurrence of the processes which normally lead to the cutting of the milk teeth; in a few cases it would seem that the anomaly is due to a true ectopia of the dental follicle and its contained tooth.

6. In a few instances a hereditary history has been established.

7. As congenital teeth are usually incomplete and ill-developed, and likely to be more an inconvenience than an advantage to the infant, they are best removed soon after birth, an operation which can be easily, and, except in very rare instances, safely performed.

8. The occurrence of premature teeth in certain well-known historical personages is an interesting fact, the importance of which has been much exaggerated.

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Part Second.

REVIEWS.

Twentieth Century Practice of Medicine. Edited by THOMAS L. STEDMAN, M.D. Vol. IV. London: Sampson Low, Marston, & Company, Limited: 1896.

THE fourth volume of this international Encyclopædia of modern medical science treats of diseases of the Vascular System and the Thyroid Gland. The principal contribution, "On the Affections of the Heart and Pricardium," is from the pen of Dr James T. Whittaker of Cincinnati. The article is a long one, extending to 450 pages. It is a common-sense and practical consideration of our present knowledge of the subject, and is pleasant reading, though at times some American idioms creep in. The views of various writers are very fully quoted all through the article, and at times one is inclined to wish that the author would give us the benefit of his own opinion and the results of his observation with more decision. Commencing with affections of the Pericardium, the article next passes to Congenital Anomalies, which are shortly glanced at. Hypertrophy and Dilatation are next discussed in a separate section. The combined condition is divided according as the etiological factor is found in the valves, in increased resistance in the vascular system, in disease of the heart muscle itself, or in affections of the nervous system. The section is good, and shows an extensive clinical knowledge and a wide grasp of the literature of the subject. Then follow the organic affections of the heart muscle and valves, which are fully considered. In the treatment of valve lesions the author seems to have confidence in the much-discussed Schott method, as he states that the heart muscle is best toned by baths and exercises, applied and adapted under intelligent supervision. In the section on Fat Heart there is some inevitable overlapping of the former article by Oertel. In the treatment of Tachycardia little faith is shown in drugs; in the author's experience sedatives only result in the temporary blunting of the sensations at the cost of subsequent comfort to the patient. The article ends with the consideration of cardiac pain. Taken as a whole, the monograph is a plain statement of our present knowledge, with liberal recognition of the views of different authors. It is perhaps a pity that the references are not given to the original papers instead of a mere statement of the author's name, as the value to the student would have then been greatly enhanced. If in anything, the article lacks strength in the consideration of the therapeutics in cardiac diseases. Diseases of the Bloodvessels are undertaken by Dr Sansom. Commencing with the consideration of Aortitis, he raises a warning voice against the indiscriminate treatment of cases by the methods of Oertel and Schott. Considerable space is given to Aneurism of the Aorta. The author has found the local application of cold give excellent results in the treatment of aneurism, diminishing the pain, and, he states, shortening the period during which absolute rest must be enforced, by increasing the formation of clot. The section on the Symptoms and Treatment of Chronic Arteritis and Arterial Sclerosis is most admirable, though few clinicians will entirely agree with Dr Sansom in his estimate of the value of sphygmograms. The article closes with a short bibliography. Diseases of the Lymphatic Vessels are discussed by Dr Bertrand Dawson; diseases of the Thyroid Gland by Dr George R. Murray of Newcastle-on-Tyne. Myxœdema is very fully treated, and some excellent photographs of the results of treatment of thyroid feeding, on which the author is so eminently fitted to speak, are given. In the consideration of Exophthalmic Goitre Dr Murray leans strongly to the view that the disease is primarily one of the thyroid gland, and much weighty evidence is brought forward in support of the theory. An excellent article concludes with a comprehensive bibliography, which should be of value to the student of the subject.

Taken as a whole, the fourth volume is quite equal to its predecessors in interest, and in the extensive knowledge of their subjects shown by the contributors.

Epidemic Ophthalmia. By SYDNEY STEPHENSON, F.R.C.S. Ed.
Edinburgh and London: Y. J. Pentland: 1896.

CAREFUL work thoroughly done, such as that given to the world in *Epidemic Ophthalmia*, deserves a good word of commendation

Mr Stephenson has had exceptional opportunities of observing such cases and of studying the subject, and as every one of his readers—and they are quite sure to be many—will admit, he has certainly availed himself of these advantages to the full. He has studied the conditions of the eyes, in regard to folliculosis particularly, of children in schools which were infected, of children before entering these schools, of children in other and healthy schools; he has made particular inquiries as to the mode of spread and means of prevention; he has given much attention to the details of school hygiene, of baths, of towels, of ventilation, etc., etc. The author has come definitely to the conclusion—and, for our part, we do not see how he could avoid doing so, although some men of good standing differ—that folliculosis and trachoma are quite distinct diseases, presenting, it is true, certain points of resemblance, but which are not to be confounded. He tells us that he was first brought to this opinion by observing the fact that if vesicles were a sign of trachoma in an early stage, then 75 per cent. of the children sent for admission to the Lambeth Schools at Norwood would have had to be rejected as suffering from a contagious disease.

Mr Stephenson is of opinion that pannus is really trachoma of the cornea, and adds to the proofs and explanations on the usual lines a little suggestion of his own. Whether this opinion is correct or not, this is an illustration of Mr Stephenson's thoughtfulness and desire to bring new lights to bear on all of which he treats, and as such we mention it with approval.

In the well-written section on treatment are many good pieces of advice in regard to selection of remedies suitable to the circumstances of the individual case. The author seems to show capital judgment in deciding the points which ought to make the surgeon prefer, for a certain eye, nitrate of silver to acetate of lead, or roller forceps to excision of the cul-de-sac.

If the book has a fault, it is that it is too long, and that too many authors who are quite wrong in their views are quoted and referred to. As an example among many, Gunning is quoted and not condemned for saying that the prevalence of trachoma among Hebrews is due to the frequent ceremonial washing of the Jewesses, the law requiring complete immersion. But if this explanation has any real weight, why is the disease so extremely common in Ireland, and among the Irish all over the world? We have never heard that *they* are very strict in regard to such ablutions. The fact that this fault exists shows, however, how widely Mr Stephenson has read up his subject, and how familiar he is with all opinions on the points at issue.

Clinical Illustrations of the Diseases of the Fallopian Tubes and of Tubal Gestation. By CHARLES J. CULLINGWORTH, M.D., Hon. D.C.L. Durh., Obstetric Physician to St Thomas's Hospital, London, etc. London : Rivington, Percival, & Co.: 1895.

THIS is not a text-book of the diseases of the Fallopian tubes, neither is it an account of all the maladies to which these organs are liable. It is something different, and in certain respects better than that, for in it Dr Cullingworth has given a series of beautiful plates, many of them in colour, illustrating tubal conditions met with in his operative practice, and has appended thereto clinical details and notes respecting each case. All gynecologists owe the author a debt of gratitude for this work, and for the extreme care and faithfulness which have been exercised with the illustrations. Practically only two sets of conditions are represented,—tubal inflammation, and especially that following gonorrhœal inflammation of the endometrium; and tubal gestation. Tubercular disease of the tubes is also dealt with. In a concluding chapter Dr Cullingworth summarizes his views on these subjects. We note that he ascribes the tortuosities of chronically inflamed tubes to an increase in their length occurring in a confined space. The results when the tubal inflammation is distinctly purulent vary with the condition of the abdominal tubal ostium; if this remains patulous, the pus passes into the peritoneum, where, surrounded by adhesions, it forms an intra-peritoneal abscess; if, as is more common, the ostium is closed, the pus accumulates in the tube, and forms a pyosalpinx. Salpingitis is due chiefly to three causes,—to gonorrhœa in the great majority of non-puerperal cases; to sepsis when it follows labour or abortion; and to tubercular infection from tubercular areas elsewhere in the patient; or from without on fingers, instruments, or in coitus. The plates and notes regarding tubal gestation are very instructive, and demonstrate the mode of formation of tubal moles and of the occurrence of tubal abortions. With the statement that tubal rupture is more often due to the formation of the tubal mole than to distension of the tube by the growing embryo it is difficult to agree; but we believe Dr Cullingworth is right in regarding most cases of intra-peritoneal hæmorrhage in the female as due to tubal pregnancy.

Lectures on Diseases of the Spinal Cord. By Dr PIERRE MARIE. Translated by MONTAGUE LUBBOCK, M.D., F.R.C.P. Lond. London: The New Sydenham Society: 1896.

THE New Sydenham Society deserves the thanks of all English-speaking neurologists for rendering this valuable work accessible to those who are not well acquainted with the French language.

The first seven chapters of the book are occupied with anatomical considerations of the various tracts of the spinal cord as determined by the study of development and of experimental and pathological degenerations. This part of the work is of great value to the anatomist as well as to the neurologist, and is thoroughly up to date. The remaining chapters are devoted to spastic paraplegia, insular sclerosis, locomotor ataxia (to which sixteen lectures are devoted), Friedreich's disease, combined lateral and posterior sclerosis, infantile spinal paralysis, and amyotrophic lateral sclerosis. The lectures on locomotor ataxia, or tabes dorsalis, as it is called, form one of the best accounts of the condition with which we are acquainted, both from the clinical and the pathological standpoint.

The translation, on the whole, has been well done, although here and there the meaning is somewhat obscure, and some unfortunate Gallicisms have been introduced. The number of illustrations (244), although they are not all well executed, greatly enhance the usefulness of this valuable work.

Pediatrics: The Hygienic and Medical Treatment of Children. By THOMAS MORGAN ROTCH, M.D., Professor of the Diseases of Children, Harvard University. Edinburgh and London: Y. J. Pentland: 1896.

OUR American brethren have for a number of years accustomed us to expect a great deal from them in all matters relating to the treatment of children; and since the appearance of Keating's *Cyclopædia* there is none of them whose name is more frequently quoted than that of Dr Rotch. We therefore opened this book with great expectations, and we have certainly not been disappointed. We know of no other work in which the most important subjects here treated of are so fully, satisfactorily, and practically dealt with.

The book does not cover exactly the same ground as most standard text-books on the diseases of children do, its space being taken up to an unusual extent with matters which have fully more to do with the prevention than with the cure of disease. We have, for example, the first 108 pages occupied with a description of those facts of the Anatomy and Physiology of infancy which are important from the physician's point of view; and after this a brief but excellent description of Nursery Hygiene.

Then follow 135 pages on Feeding, which constitutes perhaps the most generally interesting division of the book, and give a better statement of all that is known on this subject than can be found in any other work with which we are acquainted. The milk laboratory which is described is a most interesting and valuable institution, and one which might with great advantage be introduced into the large towns of our country.

The next section also merits special commendation. It is on the very important subject of Premature Infants,—one which has not received with us the attention which it deserves,—and gives a good idea of how much can often be done by the use of special means and knowledge to save premature children who would otherwise die.

The next chapter deals shortly with the principles of examining sick children, and very shortly and unappreciatively with the effects

—mostly the ill effects—of drugs. Then, after an elaborate series of four lectures on the Blood in Infancy and Childhood, which indicate a large amount of original work, and three on the New-born Child and his Diseases, the author passes to the consideration of the ordinary diseases of childhood.

These are treated clinically from the point of view of the author's own experience, and his remarks are copiously illustrated by careful notes and photographs of cases. Those who look here for a thorough and systematic description of diseases and their treatment will be disappointed, and there are not a few points on which we should have liked to know more of Dr Rotch's views than he gives us. Of their kind, however, the lectures are excellent, and contain a great deal of original and suggestive work.

The large number of the black and white illustrations scattered throughout the text constitute a very pleasant and useful feature of the book; and although a few of them fail to give a very clear idea of what they are meant to illustrate, the large majority are exceedingly good. Some of the coloured ones also are effective, but several of them are disappointing,—including the portrait of the sinister-looking baby represented in the frontispiece.

The whole work is characterised throughout by practical wisdom and common-sense in no ordinary degree, and by a marked absence of extreme views and unguarded statements. It will be found of the greatest possible value as an aid to practice by all who have to do with sick children, and we confidently predict for it a long and honourable career of usefulness.

The American Journal of the Medical Sciences. Vol. CXI., No. 3, March 1896. Philadelphia: Lea Brothers & Co.

THE principal article in the March number of the *Journal of Medical Sciences* is devoted to the discussion of the clinical application of the "Röntgen Rays." The apparatus and its use is fully described by Prof. Magee. For the most part the apparatus is identical with that used by Röntgen in his original work. The efficiency of the Crook's tubes was tested by means of the striascope, an instrument designed to take advantage of the fact that the Röntgen rays cause florescence in certain substances, and hence direct visual observation of the rays and the shadows cast by them can be made.

The Use of the Rays in Surgery is undertaken by Prof. Keen. He concludes that deformities, injuries, and diseases of the bones will be more or less amenable to diagnosis by this method. He considers that the detection of foreign bodies in the tissues will be one of the most important uses of the method.

A Study of an Infant's Body in the Pregnant Womb is contributed by Prof. Edward P. Davies. The difficulties in obtaining a good striagraph were great, but it seems probable that information of practical value regarding the position and attitude of the fœtus may be obtained with the future development of the method. The article is very freely illustrated with plates, mostly of the hand and arm. One of the most interesting is one of a case of resection of the elbow, striagraphed through the plaster case and dressing.

The other articles in the number comprise the Crossed Knee-jerk, by J. S. Risien Russell; the Influence of Alcohol and Alcoholic Drinks on the Chemical Processes of Digestion, by Chittenden and Mendel; and Stones in the Common Bile-Duct and their Surgical Treatment, by Finger of Chicago.

The A B C Medical Diary and Visiting List, 1896, *combined with the "Excerpta Therapeutica."* London: Burroughs, Wellcome, & Co.

The Professional Nurses' Diary and Ready Reference Book, 1896. London: Burroughs, Wellcome, & Co.

These Diaries will be found very useful and most convenient; the former for medical practitioners, the latter for nurses. The authors state that they will be glad to receive hints from medical men for next year's Diaries.

Ephemeris Pharmacologica: Being brief Synopsis of the Remedial Uses of Drugs and Modern Scientific Preparations, with Notes on Emergencies; to which is added a Visiting List. London: 1896. Printed by Letts & Co., London.

This is an exceedingly beautiful miniature visiting list, and also most useful.

Memorials of the Faculty of Physicians and Surgeons of Glasgow, 1599–1850, *with a Sketch of the Rise and Progress of the Glasgow Medical School and of the Medical Profession in the West of Scotland.* By Alexander Duncan, B.A. Lond., Secretary and Librarian to the Faculty. Glasgow: James Maclehose & Sons: 1896.

Every one who knows the genial author of this work and is able to appreciate his accurate scholarship, his love of books and old-world stories, and, above all, his absolute devotion and loyalty to the Faculty whose faithful servant he has been for thirty years, will expect much from this book. And they will not be disappointed, for it is not only a storehouse of Faculty history, but it throws many sidelights on much that is interesting in the past of Glasgow and the West of Scotland, bearing specially, of course, on medicine and surgery, sanitation, medical education, and, above all, the relations, often strained, between the Faculty and the University of Glasgow. The book, like the Faculty, may be said to start with an account of the arrival in Glasgow of that quaint, lovable, and masterful man, Maister Peter Lowe, who after a medical training in France, and many adventures, fixed his camp in Glasgow, became a town doctor, and practically founded the Faculty. His handsome features, bold eyes, and well-trimmed beard are reproduced from the famous picture in the Faculty Hall in a telling frontispiece to the volume. Most of us who are interested in the past of the profession know Maister Peter Lowe as a familiar friend through Dr James Finlayson's admirable Memoir, published in Glasgow in 1889. Since founded and incorporated the Faculty has had a fairly prosperous, and certainly a stirring existence, for nearly three hundred years. Seldom without a good *ganging law plea* going on, constantly at war with the University, and frequently exercising discipline both on quacks outside and erring brothers inside its community, the Faculty, if sometimes in difficulties, need never have been dull. On all its history Mr Duncan dwells with a loving hand, and also on many cognate subjects, such as the management of Glasgow sanitation, the rise of its Medical School, and Glasgow medical clubs and societies. The Faculty Library obtains, as it deserves, a full, discriminating, and informing notice. No one knows its riches so well as does its librarian, and no one is more willing or more courteous in displaying its treasures. A Roll of Members is given down to 1851. The latest history of the Faculty, including its union for diploma-giving purposes with the sister Corporations in Edinburgh, may form material for another volume after time has set its imprimatur on the union.

For those who like history of the past this beautiful volume will be a great treat to read and a treasure to add to their library shelves.

Part Third.

MEETINGS OF SOCIETIES.

MEDICO-CHIRURGICAL SOCIETY OF EDINBURGH.

SESSION LXXV.—MEETING VI.

Wednesday, February 19, 1896.—Dr ARGYLL ROBERTSON, *President, in the Chair.*

I. EXHIBITION OF PATIENTS.

1. *Dr James* showed—(*a.*) A patient who, he said, had come in from the country three or four weeks ago. The history was that he had possibly received an injury to the left foot five months ago. This, however, was doubtful, and could not have been very severe. Shortly afterwards he became lame in the left leg, and had severe pain in the bones of the left foot. He was treated outside for this

with rest and fomentations, without effect. Then he was sent in to the surgical department of the Infirmary. On examination there was found some thickening about the left foot, but its nature was not very clear. The point of medical importance was that in examining the leg they found distinct wasting of the muscles of the left leg, and to a certain extent also of the left thigh. He walked very much better than when he came in, but the foot was slightly everted, and movement tended to bring on pain. With wasting of the muscles of the left leg and foot, there was marked increase in reflexes. In both legs, especially the left, the knee-jerk was very much increased. Ankle-jerks also increased, especially the left. Knee clonus and ankle clonus present on both sides, especially the left. There was no doubt some thickening about the left tarsus; but the point seemed to be that, as the result of some peripheral source of irritation, his lumbar cord was in a state of increased irritability, causing increase of knee and ankle jerks, and clonus. They thought it a case of functional increase of irritability of lower part of cord. But in such cases the muscles were ordinarily well nourished, while in this case there was some wasting of muscle. There was no reaction of degeneration, so that he thought the wasting was simply the result of disuse. He thought, therefore, that this was a case of increased irritability of the lumbar cord from irritation proceeding from the bones of the foot. Since the patient's admission they had given him baths, on the theory that it might be rheumatic. After each bath the mobility was increased.

(*b.*) A boy, æt. 9 years, with PSEUDO-HYPERTROPHIC PARALYSIS, the hypertrophy well marked in the muscles of the back. He had the ordinary symptoms. There was no family history. The hypertrophied muscles were found to be stronger proportionally as a whole, and reacted more to electricity than the muscles weakened and at the same time atrophied. There was nothing very special about the case.

(*c.*) A case of HYDRONEPHROSIS. The patient was a man, æt. 46, who was admitted with a distinct fluctuating swelling in the left lumbar region. There was a history of a swelling of exactly the same kind in 1878, from which he had recovered, and he remained well until it returned some months ago. They had not been able to make out the cause. There was no history of calculus. But when comparatively young he had had what he called an attack of dysentery. He seemed to have been ill then for several weeks, passing mucus and blood; and in connexion with the hydronephrosis, they thought it possible that there was some inflammation about the sigmoid flexure which, as the result of cicatricial contraction, had obstructed the passage of urine down to the bladder. They treated him with rest in bed for a few days. The hydronephrosis did not diminish. They accordingly punctured, and took off about 20 ozs. of dilute urine with some blood. The sac collapsed, and was found to communicate with the ureter—the urine becoming bloody. As the sac filled with water the ureter again became obstructed. They soon saw that the amount of coloration in the urine diminished, and the sac enlarged again. They therefore aspirated a second time, and took care to empty it completely. After this there was blood for a day or two, but now there was no appearance of the kidney enlarging, and the urine was perfectly clear. The sac was collapsed, and he was safe for some time. The last tapping was done a week ago on Sunday. In drawing it off they felt carefully for a stone, but could not make it out. The obstruction was therefore probably due to some band pressing on the ureter.

2. *Dr Logan Turner* showed a woman, æt. 57, who had been sent to him by Dr R. A. Fleming, suffering from LARYNGEAL PHTHISIS, on December 24, 1895. At that date the lungs showed consolidation of both apices in front and behind, with numerous coarse and fine crepitations. The sputum was copious, and contained many tubercle bacilli. The larynx showed swelling of arytenoid cartilages, especially the left; and the left ary-epiglottic fold was prominent, and tending to the pear shape. The true vocal cords were congested, but no ulceration could be detected. On the posterior wall in the inter-arytenoid space there was a well-marked raised uneven edge indicating ulceration below. She could only speak in a hoarse whisper, and suffered from dysphonia, dysphagia, and sometimes considerable dyspnœa. Treatment consisted in bi-weekly intra-laryngeal applications of the mixture recommended by Dr Chapell of New York—Creasote, ʒjss.; ol. ricini, ℥iij.; ol. gualther., ʒiij.; ol. hydrocarb, ℥j.; menthol, gr. 10. Improvement began to show itself in a fortnight, and on February 19, 1896, the accompaniments in the lungs had disappeared, except a few at the right apex behind. The sputum was much diminished. The swelling of arytenoids and left ary-epiglottic fold had disappeared, the vocal cords were but faintly reddened, and the ulcer on the posterior wall was healed. The voice was strong; there was no dysphonia, dysphagia, or dyspnœa; and the general condition had improved. During the last fortnight she had been taking guaiacol carbonate, 5 grs. thrice daily, with much benefit to the cough.

3. *Mr Cotterill* showed a case which, he said, was of considerable interest, chiefly perhaps in connexion with the question of proper treatment. The case was one of PLEXIFORM ANGIOMA, sometimes called CIRSOID ANEURISM; but the latter term was generally restricted to a tortuous condition of the arteries, the former to those in which the veins were also involved. The vessels mostly at fault in this case were the transverse facial, temporal, posterior auricular, and to some extent the occipital. The tumour began, as many of these cases did, with a traumatism. He got a blow

with a cricket ball when 18 years of age, which resulted in a black eye, with a good deal of swelling, which became organised, and did not subside as it should have done. He had a photograph of the condition at 18, when the swelling was restricted to the eye, but from that time it spread enormously outwards, backwards, and downwards. On lifting the eyelid one found the eye at the bottom of a deep pit, in what he believed to be a normal condition, except for slight conjunctivitis. He could not feel the facial artery on the affected side, although there was a groove in the bone, just where it ought to be. The patient had been under treatment more or less for the last thirty years, but nothing had been done for some years past. He had been treated in Britain by various well-known surgeons, including Prof. Spence, but nothing had done any good. In front of the ear, one could feel a very large vessel, the transverse facial, enormously enlarged, and the posterior auricular, not so much enlarged, could be felt distinctly pulsating. The branches of the temporal were very much enlarged. Above the eye the bone had been encroached upon, as was sometimes the case. Whether this was periosteal thickening or eating of the tumour into the bone, it was not easy to say with certainty. It might be a question of interest whether this tumour was restricted to the branches of the external carotid, or communicated through palpebral or supraorbital branches with the internal carotid. In the latter case treatment would be more difficult. The tumour had been growing fast lately, especially downward. Perhaps also it tended to drag from its own weight. On its surface there was a large cicatrix, due to the fact that at one time he took the advice of an unqualified practitioner of the female sex, who applied some caustic, causing ulceration,—so far interesting that it did not kill him. The ulceration healed, and that encouraged one as to future proceedings. As regarded treatment, one could, in the case of a small angioma, either excise or pass subcutaneous ligatures through it, much on the same principle as in ligature of a pile; but neither of these plans could be thought of in this case. Ligature of the separate vessels feeding such a tumour had not been found successful. It was said that not a single instance of the kind had resulted in cure. Ligature, however, of the vessels at a distance—*e.g.*, external carotid—had in a very few cases been followed by cure. In one or two cases both external carotids had been tied, and in one case at anyrate a cure resulted. Thirty per cent. of such cases dealt with by ligature of the common carotid had proved fatal. In the present case ligature of the branches would not be satisfactory, for there must be dozens of them. Probably ligature of external carotid, together, possibly, with electrolysis, would be best. These two methods combined might help to solidify part of the tumour, and something might be done subsequently in the way of excision. There were some hard lumps here and there which might be the result of experiments in galvano puncture done several years ago. Pulsation in the tumour was never very strong. After compressing the main vessel so as to hinder blood supply, and then squeezing the blood out of the tumour, it filled very quickly,—not so quickly as when the common carotid was free, but still quickly enough to show that they could not trust to ligature of the common carotid to prevent hæmorrhage. He would be glad to have the opinion of the Society on the question of treatment. These tumours occasionally occurred on the body and sometimes on the limbs, but usually on the scalp. There was one form of treatment of which he thought the patient in this case would probably not approve, viz., amputation. It was suitable when the tumour occurred on the foot. In reply to a question by the President, Mr Cotterill said that there was a very slight bruit.

4. *Mr Caird* showed a boy who had been suffering for two years and seven months from HIP-JOINT DISEASE. He had diarrhœa and was emaciated. Obviously there was nothing to be done but amputation. This was done after the usual circular method, and he went back in rather a collapsed condition. About 3 A.M. he found it necessary to transfuse, and injected about 12 ozs. of saline solution. The patient had since been on a voyage up the Baltic, and had returned stronger than before. He got along wonderfully well on one leg.

II. EXHIBITION OF SPECIMENS, ETC.

1. *Dr Thomson* related the clinical history of a case of DEPRESSED FRACTURE OF THE SKULL, of which the specimen was shown. The patient was a seamen, æt. 56 years. In July 1889, while working on board ship in Burntisland harbour, he fell from a yard to the deck, a height of 12 feet, was picked up unconscious, and taken to a lodging-house in the town, where he was attended by a medical man. He was unconscious for three days. After that he regained consciousness, and in a few weeks resumed work. There was, he said, a depressed fracture of the skull in left temporal region. The patient lived six years after that, for five of which he followed his occupation. He had no symptoms beyond giddiness, while walking along a plank. The depression was almost circular, about 3 centimetres in diameter, almost like a trephine wound. Some years after the accident he began to suffer from epithelioma of the tongue, from which he died in about twelve months.

2. *Mr Cathcart* showed—(*a.*) The specimens from Dr Johnston's case. Being anxious, he said, to bring out the feature as well as possible, he had cut away all the facial bones and hardened the brain *in situ.* When the brain was thoroughly hardened he carefully removed the skull-cap, and they could now observe that the skull-cap showed, besides the depression in the frontal region, another depression of no less extent in the occipital region, unsuspected

during life. In order to see the effect produced he had made a gelatine cast of the interior of the skull-cap, showing the great depression in the frontal and occipital regions. The brain itself showed marked depressions, although from the contour being so much broken up by the natural convolutions, they were not so marked as in the skull. The dura mater was adherent to the skull, but not to the arachnoid or pia. The brain was quite healthy below. There was simply depression without inflammation, softening, or any other change. This case appeared to be an interesting confirmation of the view that it was not so much depression of the surface that caused the mischief as irritation produced by sharp spicules or fragments. The frontal region could probably stand more without showing symptoms than most other parts of the cranial contents.

(*b.*) A specimen of SARCOMA OF THE LUNG, sent by Mr Alexis Thomson. The patient had been admitted to Deaconess Hospital. Dr Cattanach would relate the clinical history.

(*c.*) A plaster cast of RIGHT ARM and a DISSECTION OF THE ELBOW, showing backward dislocation of ulna and radius. The capitellum was very much atrophied, and the head of the radius rounded. All the movements were impaired.

(*d.*) A specimen of ELEPHANTIASIS OF LABIUM MAJUS, which had been sent to him from Mombasa by Dr Macdonald. He himself possessed a specimen of twice the size.

(*e.*) A specimen of HYDRONEPHROSIS WITH A VALVULAR CONDITION OF URETER, as in Dr James's case. The special point was the development of plain muscular fibre, not only in the wall of the sac, but also in the form of a series of bands stretching across it. Both to naked eye and microscopically there was distinct evidence of their muscular structure.

(*f.*) He showed for Dr Felkin a GROOVED CATHETER, *i.e*, with the lumen replaced by a deep groove. It could thus be more easily kept clean. The grooved form might be useful in cases of retention from spasm, but would not be suitable for the small catheter required in cases of stricture.

3. *Dr Cattanach,* in the absence of *Mr Alexis Thomson,* related the history of a case of SARCOMA, of which the specimen of the lung was shown. The patient was a miner, aged 24, who had come to hospital in June 1895. There was a small swelling of about the size of a walnut underneath the skin near the internal malleolus. It was diagnosed a neuroma, from the pain and position. Mr Thomson cut down and removed a mass of about the size of a small hen's egg near the internal malleolus, and above that a similar mass of the size of a hazel nut. Microscopic examination showed it to be a sarcoma. The wound had healed perfectly in two weeks. Two months later there was recurrence at the seat of the wound, and he came to hospital again. Mr Turner performed amputation,

and also cut down and removed a gland in the groin. The patient recovered and went to Convalescent House, but in November he came back with a larger mass of the size of a bantam's egg in the groin. Mr Thomson cut down and removed the mass with some difficulty. There was considerable venous hæmorrhage, and he had to ligature the femoral vein. About six days afterwards the patient showed lung symptoms, brought up some blood, and his temperature went up to between 105° and 106°. They thought of pulmonary embolism. By and by there were signs of pleuritic effusion. On three occasions they aspirated and took away blood-stained fluid, about 50 ozs. each time. He suffered great distress after the tappings, became very dyspnœic, and died two days afterwards. At the post-mortem there were found sarcomata under the skin, on the scalp, and on opening the chest both lungs were found studded all over as specimen shown. There was nothing in kidney or spleen, but all the other organs, even the heart muscle, had sarcomatous growths. There was no thrombosis at seat of operation.

4. *Dr Byrom Bramwell* showed—(*a.*) Some water-colour drawings and photographs of a typical case of ANÆSTHETIC LEPROSY which had come under his observation a few years ago. (*b.*) Water-colour drawings of a case of CANCER OF THE LIVER, which presented some features of clinical interest. (*c.*) Photographs and a series of drawings representing a GLIOMATOUS TUMOUR, which was limited to the right side of the pons varolii, and which produced unilateral paralysis of a large number of cranial nerves.

5. *Dr Gillespie* showed some specimens of ALBUMOSES GOT FROM A SINGLE SPECIMEN OF URINE—one of the most extraordinary urines he had ever seen. The patient passed a large quantity of urine, and there was also a history of albuminuria. In January last, out of 2860 c.c. he got about three times as much albumose as albumen. There was a trace of albumen and various albumoses. He had under observation a lady with albuminuric retinitis and albumosuria, so that the absence of albumen from the urine did not signify the absence of Bright's disease. He had seen it in other cases in which there was no history of renal disease.

6. *Dr Leith* showed—(1) a CASE OF PHLEGMONOUS GASTRITIS—naked eye and microscopic specimens. He said—John M'K., æt. 49, clay-pipe maker, a strong healthy man, felt somewhat out of sorts on Thursday, Jan. 9, but continued at work all that day and the next. He remained in bed during part of Saturday, getting up for a few hours only. The bowels moved freely during the day. He took a good breakfast early on Sunday morning, but two hours afterwards vomited, and this continued at intervals for two or three hours. He slept well that night, but was wakened about 5.30 A.M. on Monday by severe pain in

the region of the stomach. Vomiting began shortly afterwards, and continued throughout the day. It was at first clear, but soon became bile-stained. Dr William Wood (to whose kindness I am indebted for these early notes) saw him for the first time at 11.30 P.M. He had an anxious look, and was perspiring slightly. His pupils were contracted, and he was restless, with slight delirium. The tongue was dry and covered with a dirty white fur. Temperature 101°; pulse 110, full and somewhat tense. He complained of slight frontal headache and severe pain over the region of the stomach, which was aggravated by the lightest percussion. Dr Wood saw him five times between 1 P.M. on Tuesday and 1 A.M. on Wednesday, and his condition did not improve. Hydrocyanic acid, bismuth, liq. morph. hydroch., and ice, were given internally, and poultices, linseed and mustard, were applied over the stomach, and relieved the vomiting. On Tuesday his temperature was 102°·5, and pulse 86. He was quite conscious, and complained of much thirst, and marked pain in the region of the stomach, and also in the right hypochondriac region. The bowels had not moved, and a soap and turpentine enema was given, and repeated three or four times, with no effect. There was tenderness on pressure in the left hypochondriac region, but no tympanitis until after 1 A.M. on Wednesday morning. He was admitted on the forenoon of that day, Jan. 15, to the Royal Infirmary, under the care of Mr Duncan. Peritonitis was suspected, and Mr Thomson performed laparotomy very shortly after his admission. A general peritonitis was found, showing some concentration towards the right iliac region; but the vermiform appendix was found to be normal. No cause of the peritonitis could be ascertained, and although the patient rallied for a time after the operation, he died late in the same day. At the sectio I found an early acute peritonitis, showing only a very little whitish lymph here and there, and no noticeable concentration towards the right side. A small white patch about the size of the thumb nail was observed over the lesser curvature of the stomach, about 1½ inch above the pylorus. This proved to be purulent lymph, about ⅛ inch thick, adherent to the peritoneal coat and lesser curvature of the stomach. The peritonitis had spread from it. The stomach wall was felt to be greatly thickened, especially in the region of the pylorus. The cavity contained about 2 ozs. of pale yellow fluid. The mucous membrane was pale and greatly swollen throughout, especially in the region of the pylorus, where it showed a slight excoriation of its upper layers. It had a peculiar pulpy feel, but there was no visible ulceration. Sections showed the mucous membrane and muscular coats to be clearly defined and separated from one another by a greatly thickened submucosa of a yellowish-white colour. It was exactly the colour of pus, but no fluid exuded It was almost half an inch thick from the pylorus upwards for three or four inches. Thence it spread upwards in varying thicknesses to the cardiac arch (well seen in specimen). No break in either the mucous or the muscular layers could be found at the seat of the purulent lymph on the peritoneal surface. The duodenum was healthy, and the bile flowed freely into it. All the other organs were healthy.

Microscopic Appearances.—The submucous coat is nearly everywhere infiltrated with small round cells, some with a well-stained single round nucleus, others in which the nucleus stains badly. A few of the cells are larger, with a bigger, sometimes lobed nucleus. The amount of cellular infiltration varies greatly in different parts; in some no other structure is to be seen, and they form a mass of great thickness (Microscope 4). In other parts they form a layer many times thinner and are less abundant, allowing of the thin reticulum of the normal submucous coat to be seen. Its vessels are dilated (Microscope 1.) The muscularis mucosæ appears normal, but is broken at places by strands of similar small round cells. These are well seen where small vessels penetrate it from the submucous into the mucous coat. The mucous coat itself is greatly infiltrated with these cells. They form dense, thick strands here and there, surrounding and separating the gastric glands (Microscope 2). In other parts they are absent. They have apparently spread from below. The gastric glands themselves are not much altered (Microscope 1). Here and there on the free surface of the mucous membrane there is a network of considerable thickness of fine fibrin threads whose meshes are filled with round, badly-staining cells (Microscope 2). The muscular coats show the same infiltration, both in masses passing outwards, especially along the lines of the vessels, and sometimes in strands passing horizontally between the muscular bundles, and separating them from one another. Many of these cells are large, with distinct clear protoplasm, and a large well-stained nucleus (Microscope 3). Many of the cells reach the peritoneal coat, and spread themselves out over it, mingled with fibrin threads. In the submucous coat there are immense numbers of micrococci, mostly arranged in well-formed chains, many single, many diplococci, and here and there are dense staphylococci-like masses. These were present in the exudation on the mucous coat, very sparsely in the superficial part of the mucous coat, in enormous numbers in the submucous coat, especially in its deeper part, and in places in the muscular coat, wherever the exudation was present, and generally all over the peritoneal coat. Many of them are free, and many enclosed within leucocytes (Microscope 5). This is a beautiful example of the diffuse form of idiopathic phlegmonous gastritis, an extremely rare disease. The other form, the localized, forming a distinct abscess, is also very rare. It is met with as a primary condition, as in this case, or as a metastatic condition in a general pyæmia. Phlegmonous gastritis is more common in males than females, in the proportion of about four or five to one. Its ætiology is extremely obscure. In the present case the patient had not been addicted to alcohol. The cocci were most probably the cause, but there was nothing to explain their appearance or method of entrance.

(2.) HÆMORRHAGIC PANCREATITIS (Dr Russell's case)—naked-eye and microscopic specimens. There was much thickening in the neighbourhood of the pancreas, causing the organ to appear considerably enlarged. Shining through this, it appeared to be of a slate or reddish-brown colour. The peritoneum covering it was somewhat thickened and separated from the anterior surface of the gland by a fatty-looking tissue. This is quite unusual, as even in very obese bodies the peritoneum is closely approximated to the anterior surface of the gland. The layers of the transverse mesocolon appeared to be normal, and showed no hæmorrhage; nor was there any hæmorrhage retro-peritoneally in its neighbourhood. No areas of fat necrosis in the omentum, peritoneum, or abdominal fat were observed. The thickening around the pancreas was chiefly above and below it, and was seen to consist chiefly of fatty tissue, with bands of fibrous tissue running through it. Here and there also, close to the pancreas, were small pea-like foci, sometimes a little larger, filled with a granular putty-like material, like dried-up abscesses. These were mostly outside the capsule of the gland, but a few seemed to be inside it. They corresponded more in their appearances to chronic abscesses than to foci of fat necrosis. This fatty ensheathing tissue was especially abundant around the head and tail, but formed a thick covering all over, so that after its removal the pancreas itself was, if anything, smaller than normal. On section it presented a remarkable appearance, showing no look of pancreatic structure, except for about half an inch at the tail. In the head also there was an area about the size of a sixpence, or a little bigger, which looked like very fatty pancreas. All the rest showed a reddish-brown to black colour mingled with slatey-grey patches. The entire pancreatic tissue had here been destroyed by hæmorrhage, whose appearance suggested a multiple occurrence at different times. There were a few foci of softening, but it was mostly fairly firm. There were two thick-walled cyst-like cavities in the head of the organ filled with a putty-like substance. Fresh sections made after the specimen had been kept some time in spirit showed less difference in the suggested age of the hæmorrhages. The slate-coloured patches had disappeared, and the greater part presented the appearance of a comparatively recent hæmorrhage. There were several visible vessels filled with dark red clots. (Specimen shown.) The most noticeable points in regard to the other organs are that the liver and spleen both gave the iron reaction very distinctly, the heart showed a very distinct recent pericarditis, the kidneys a chronic nephritis, and the lungs several small foci of suppuration of an acute and subacute character. This indicated that a general sepsis had occurred, probably having its origin in the pancreas.

Microscopic Appearances.—Sections of the tail of the gland, its healthiest part, showed a good deal of chronic interstitial change and some degeneration in the pancreatic cells. Their nuclei stained fairly well, but the protoplasm was more granular and less distinct than normal. The interstitial change varied from slight to broad distinct fibrous bands (Microscope 1). Close to the margin of this tissue, where it bounded the hæmorrhagic part, several areas of small round-celled infiltration were seen among the gland cells (Microscope 2). Near them were some extensive and older interstitial fibrous bands rich in capillaries and blood sinuses (Microscope 3). Other parts at this bounding zone showed an abundant small round-celled infiltration practically obscuring the gland tissue, and close to it a patch in which the gland cells were completely necrosed, the cell walls and a little contained debris alone being left. Such patches were seen to be in close relation to duct branches (themselves considerably altered) (Microscope 4) and to vessels showing marked endarteritis obliterans (Microscope 5), but no undoubted relationship could be established. Healthy gland tissue, or at least as nearly healthy as the healthiest part, was seen close to these areas, and no patch showed an early necrotic change in which the nuclei and protoplasm were still recognisable, but stained badly. Such areas were carefully looked for, and their absence showed that the process had been a very chronic one. The margin of the hæmorrhagic part showed fully necrosed gland lobules (outlines of cells and debris) separated from one another by a great deal of fat infiltration (Microscope 6), and the complete transformation of gland lobules into fatty tissue was also apparently taking place. A minor degree of this, where the individual cells were replaced by large fat cells, occurred here and there in the healthiest gland tissue present. Other sections were taken from the body of the gland at its margin, and showed purulent-looking centres lying mostly interstitially around necrosed gland lobules. This could be seen in different stages (Microscopes 7 and 8). Sections taken from the body of the gland, the hæmorrhagic part, showed a structureless material, composed of recognisable blood-clot in places, and of pigmented unrecognisable tissue in others (Microscope 9). The inflammatory interstitial tissue inside the gland and beneath the capsule contained numerous fine wavy and twisted bacilli, apparently all of one kind. No organism could be detected in the necrotic areas. The special changes to be noticed, then, are an inflammatory change, chiefly interstitial, abscess formations, necrosis, and hæmorrhage. It is possible that the inflammation first occurs, and leads to suppuration and then to necrosis and hæmorrhage, but I have not yet been able to establish this or any other relationship with certainty.

7. *Dr W. Russell* gave—(*a.*) A note of a case in which an ABDOMINAL ANEURISM had ruptured retro-peritoneally, and showed

the specimen. The patient was a lady of 84 years. She was seized late at night with pain in the abdomen, and when her medical attendant, Dr Inkster, saw her soon afterwards, she was in a state of extreme collapse, from which she rallied under the hypodermic administration of ether. Dr Russell saw her with Dr Inkster the following afternoon. The patient had so far recovered that she was sitting up in bed, and there was no sign of collapse. She complained of discomfort in the left half of the abdomen. There was fulness anteriorly in the left lumbar region, extending up under the margins of the ribs; there was tenderness on pressure, so that deep palpation was impracticable. The fulness extended round to the lumbar region posteriorly, and here also there was tenderness on slight pressure. All the region referred to was dull on percussion, and continuous with the splenic dulness. The diagnosis was perforation within the abdomen, and from the seat of pain and the history of considerable stomach trouble, it was thought probable that the perforation was in the stomach at the splenic aspect of the greater curvature. The prognosis was regarded as extremely grave, because of the probability of fresh extravasation occurring. The patient had a second attack of collapse, in which she died. Fortunately, permission to examine the abdomen was obtained, when it was found that the condition in the loin was due to an enormous mass of black blood-clot in front of and around the kidney, completely behind the peritoneum, but very markedly bulging forward, and carrying the peritoneum with it. The large mass of blood-clot was continuous by a narrow neck with the perforation in the aneurism shown, the aneurism being fusiform and of moderate size.

(*b*.) A note of a case of HÆMORRHAGIC PANCREATITIS which had been under his care in the Royal Infirmary. The patient was a man, aged 52, who died after a week's residence in hospital. The symptoms were very obscure. There had been a history of paroxysmal pain about the stomach and at the angle of the right scapula for five months. He had been off work for five weeks. He complained also of palpitation, pain about the heart, and weakness. For some days before admission he had nausea, vomiting, and delirium. He showed on admission purpuric spots on his lower limbs, which disappeared during the time he was in hospital. The temperature was subnormal, the pulse 84. There was some albumen in the urine, the heart was enlarged, and there was pericardiac friction. He was sometimes delirious and noisy, and was always rather "off his head." The red blood-corpuscles numbered 1,850,000 per c. mm., but showed none of the characters of pernicious anæmia. The most important lesion was found in the pancreas, the morbid anatomy of which Dr Leith had kindly undertaken to investigate. He submitted this brief note, as he thought it desirable to have reference made in the *Transactions* to a disease rarely met with. The full record of the case would appear in the *Hospital Reports*.

OBSTETRICAL SOCIETY OF EDINBURGH.

SESSION LVII.—MEETING VI.

Wednesday, March 11, 1896.—Dr ALEX. BALLANTYNE, *President, in the Chair.*

I. THE following gentlemen were elected Ordinary Members of the Society:—R. W. Beveridge, M.B. C.M., 9 James Place, Leith, and John Anderson, M.B. C.M., Pitlochry.

II. *Dr Milne Murray* showed TWO VELAMENTOUS PLACENTÆ.

III. *Dr J. C. Kynoch,* Dundee, showed a specimen of HYDROSALPINX removed from a woman, æt. 38, on account of pain in left side, especially on movement of the bowels. There were delicate adhesions to the rectum. The corresponding ovary was enlarged, and showed in the cortical part two small cysts with sebaceous contents. The opposite tube and ovary appeared to be unaffected.

IV. *Dr J. W. Ballantyne* showed—(*a.*) Frozen sections of an infant with CONGENITAL DIAPHRAGMATIC HERNIA. The confinement, which took place in January, was under the care of Mr Young, one of the Medical Mission students at the Cowgate. The infant, a female, was full time, had presented in the usual way, and had been born without instrumental aid. The child was large, well formed, and apparently healthy, but it was still-born, and although it made efforts to breathe for fifteen minutes, it could not be resuscitated. Dr Graham, the Resident at the Cowgate Dispensary, began to make an autopsy, but found on opening into the thorax that some coils of intestine lay in the left pleural cavity; he accordingly, diagnosing a malformation, closed up the wound again and communicated with me. I decided to freeze the specimen and make a coronal section, as being the method best calculated to show the displacement of the viscera. Accordingly, a coronal section was made, passing through the shoulder joints above and the hip joints below. It was then seen that the left side of the thorax was entirely filled with abdominal viscera. The diaphragm was muscular and perfect on the right side, so was it also on the left side posteriorly; but anteriorly, in the position usually occupied by the pericardial attachment, muscular fibres were absent from the diaphragm, which projected upwards as a membranous sac, entirely filling the left half of the thoracic cavity. This sac contained the left lobe of the liver, a large loop of meconium-distended colon (doubtless the transverse), the whole stomach, and a great many coils of small intestine. The heart, in the pericardial sac, lay entirely in the right side of the thorax, the right lung lying quite unexpanded behind it. During its displacement the heart seems to have been rotated as well as pushed to the right, for the left ventricle lay anteriorly, and the right behind it. The thymus gland was situated in the apex of the right side of the thorax. At first sight no left lung was visible; but a careful search revealed it, very small in size, measuring barely one inch in its vertical diameter, lying in the apex of the thoracic cavity a little to the left of the median line and in close contact with the upper loop of colon, but separated from it by the diaphragmatic sac. The drawings fully showed the relations of the other viscera. The section had, unfortunately, passed between the uterus and bladder, so that neither was well shown. The left kidney and supra-renal just came into the line of section, the right kidney and adrenal lying posterior to it. Probably the drag of the displaced organs on the left side had drawn the corresponding kidney and adrenal forwards. This, therefore, was a case of congenital diaphragmatic hernia due to distension of the fibres of the diaphragm on the left side and anteriorly, leading to the displacement of the abdominal viscera into the left side of the thorax, the dislocation and rotation of the heart to the right side, and arrested development of the left lung. The starting-point would seem to have been a defect in the muscular construction of the diaphragm.

(*b.*) Three cases of ANENCEPHALY. The fœtuses were all females. The first had been sent to him by Dr James Smith of Falkirk. It showed anencephaly with a spinal canal closed as high as the cervical region. It was the product of the fourth pregnancy: the first child died at three months from jaundice (?); the second (a female) is still alive; the third was an abortion. In this instance the head presented, and there was tremendous hydramnios. There was no family history of hydrocephalus on either side. The second specimen, received from Dr James Harvey of 7 Blenheim Place, was also anencephalic, but in it the spinal canal was open in its whole extent. The labour was under the care of a midwife, and was tedious, so that Dr Harvey was called in. The head presented, and as there were no pains, the child was delivered with forceps. The third fœtus closely resembled the first, for it was anencephalic, and had yet the spinal canal closed as high as the level of the neck. It had been sent to him by Dr Frank Dendle of Lochgelly. The mother, a i.-para, 22 years old, was between the seventh and eighth months of pregnancy when labour came on. The fœtus presented by the breech, and was delivered without instrumental aid. The mother's mother ascribed the malformation to a too active interest which the mother had taken in a neighbour's child that suffered from spinal caries. There does not seem to have been hydramnios in this instance.

V. *Prof. Simpson* showed—(*a.*) A FIBROID TUMOUR the size of an adult head, which he had removed the day previously from a patient, 35 years of age. The tumour had been growing rapidly, and he had opened the abdomen in the hope that it might be a case favourable for hysterectomy according to the procedure advocated by Dr Christopher Martin at a recent meeting of the Society. Some masses, however, were found to be impacted in the pelvis, and after removing the subperitoneal masses now exhibited, he had to content himself with the removal of the left tube and ovary, and on the right side only the tube could be removed, the right ovary being bound down in the pelvis. He (Prof. Simpson) had had a series of nine cases of uterine fibroids in his ward during the last year, where removal of ovaries and tubes had been attended with the most satisfactory results.

(*b*.) AN OVARIAN TUMOUR removed from a patient, whom he had been called to see in the country eighteen days ago, suffering from an intense degree of peritonitis. The abdomen was greatly distended and tympanitic; there was distinct fluctuation in the flanks, and a somewhat solid mass could be vaguely felt in the right iliac fossa. The pulse was rapid, and it was clear that unless the abdomen was opened the patient must soon have died. The cavity was found to be largely filled with a dark gelatinous fluid stained with blood which had escaped from an ovarian tumour which had burst. The tumour was removed, the cavity sponged out, and afterwards irrigated with a boric acid lotion. A drainage-tube was introduced and the wound closed. The patient was very much collapsed just after the operation, but she gradually rallied, and has been making a satisfactory recovery.

OVARIOTOMY UNDER LOCAL ANÆSTHESIA.

Prof. Simpson said—Some months ago, having occasion to tap a patient in the country who had long suffered from uterine fibroids, and had latterly become much distressed from ascitic distension of the abdomen, I injected 20 drops of a 1 per cent. solution of cocaine into the wall, through which I pushed a bistoury to make an incision large enough to admit the finger. The incision and the subsequent introduction of the stitches caused no pain.

Some weeks ago a patient was sent to my ward suspected to be the subject of an ovarian tumour, but who was recognised to be suffering from tubercular peritonitis. In that patient Dr Webster, by the injection of a cocaine solution and the application of an ethyl chloride spray, was able so to anæsthetize the abdominal wall that an incision was made long enough to allow of evacuation of the cavity and exploration of the pelvis without causing the patient any suffering.

In February, C. C., a young unmarried woman, aged 20, of girlish appearance, was admitted to the ward with an abdominal swelling. Her menstruation had begun at the age of 14½, of the 28-day type, and moderate quantity, and continued regularly up till a year ago, when for two or three times it came on every fortnight, attended with dysmenorrhœa. Latterly it has resumed its normal characters. She first noticed a swelling in her right side when she was fifteen years of age. She had previously menstruated six times naturally and painlessly. The swelling increased steadily in size, but slowly, for four years. During the last twelve months it has grown more rapidly, and the patient experienced a sense of weight in the abdomen. The tumour was clearly ovarian, and on examination under chloroform the uterus was found on bimanual examination to be retroverted and pushed down into the pouch of Douglas, while the tumour sprung from the right side and was freely movable. As the conditions gave every prospect of an easy ovariotomy, I thought it fair to attempt the operation under local anæsthesia. On March 6, the patient having been subjected to the usual preparatory treatment, I injected 20 ♏ of a 1 per cent. solution of cocaine into the abdominal wall, nearly midway in the middle line between umbilicus and pubes, and the same quantity two inches lower down. After the fluid had been diffused through the tissue, the surface was sprayed with ethyl chloride till it took on a frosted appearance. An incision three inches in length was carried through the abdominal parietes in the anæsthetized area. The muscles showed a slight degree of sensitiveness when some fibres of the rectus were divided, and the patient seemed to feel when the peritoneum was pinched up with forceps. An incision into the main cyst allowed of the evacuation of the bulk of the tumour contents, and when a subsidiary had been perforated through the opening in the larger cavity, the tumour collapsed sufficiently to allow of its being easily pulled out through the wound. So far the operation was practically painless, and the patient lay perfectly still and uncomplaining. After the pedicle of the tumour, however, was pierced with an Olshausen's needle, and when the ligature was being tied, she screamed and began to struggle. Just here special difficulty arose from the circumstance that the ligature first introduced broke in the tying, and each time the stronger ligatures were being tightened at the two sides of the pedicle there was the same expression of suffering. When the pedicle was nipped with catch-forceps on the distal side of the ligature, and when the tumour was being cut off, and again when a mass ligature was being secured round the stump, the patient cried out and wriggled to a degree that caused some delay. Dr Keppie Paterson, who has been in the habit of kindly chloroforming our cœliotomy cases, was standing in his usual place at the patient's head, screening her face and watching circulation. He recognised, whilst the pedicle was being dealt with, that there were distinct symptoms of collapse, which led him to give her a hypodermic injection of ether. A flat sponge was, as usual, introduced behind the wound, which was closed with a double layer of sutures. The buried layer consisted of three chromicised catgut sutures, which brought together the fascia and peritoneum; while four silk sutures passed alternately with the catgut sutures through the whole thickness of the wall down to, but not through, the peritoneum, secured the external surface of the wound. The passing and tying of the sutures was effected painlessly, the only expression of suffering emitted by the patient occurring when the sponge was being dragged out of the abdominal cavity. It gave us again the impression that the peritoneum was extremely sensitive. The patient was remarkably free from pain afterwards, and had no sickness or other discomfort. There was a slight rise of temperature in the evening, which fell again by the next morning. She went on favourably, and had the bowels moved on the third day by a saline aperient. That day the temperature again rose, and on the morning of the fourth day Dr Chipman, Buchanan Scholar, in charge of the ward, noticed a scarlatinal rash making its appearance first on the arms and chest, and in the course of twenty-four hours she was seen to be the subject of a smart attack of scarlatina, with the rash all over the body, inflamed fauces and strawberry tongue. The wound remains healthy, and there is no tympanitis.

The operation was a simple one; but even in such another case I would prefer to have the patient chloroformed, for the occasional after-sickness to which the chloroformed patient is liable is more than counterbalanced by the pain to the patient of securing and severing the pedicle, the tendency to collapse that then arises, and that is averted by a full narcosis, and the disturbance to the operators by the patient's screams and struggles.

VI. *Dr J. L. Lackie* read a paper on PUERPERAL PULMONARY THROMBOSIS, with an illustrative case, which will appear in a future number of this Journal.

Dr Church thought that the Society was much indebted to Dr Lackie for this contribution on the subject of puerperal pulmonary thrombosis and embolism. The case which he had made the text of his paper was appallingly sudden in its fatal issue. It reminded the speaker of his own case, to which Dr Lackie had referred. Dr Church's patient survived longer, no doubt from the fact that the pulmonary artery or arteries were not so completely occluded by the thrombus. The accident sometimes occurs just before the birth of the child, though this is rare. In most cases of the kind the rheumatic element was generally present, and was likely, Dr Church thought, to have been the initial cause in Dr Lackie's case.

Dr George Elder said that the case to which Prof. Simpson had referred was that of a primipara who had done pretty well after delivery, except for a slight rise of temperature in the evening for several days after delivery. There had been little discomfort, however, then, and patient had afterwards been quite well apparently, and had been up every day for some hours for a week, when on the morning of the twenty-first or twenty-second day, when she was sitting on the edge of the bed, and nurse was putting on her stockings, she suddenly fell back in a state of terrible dyspnœa. She lived for about two hours after the sudden onset. Here the date at which the onset occurred—three weeks after delivery—seemed to show that the case was one of pulmonary embolism, and it was worthy of notice that at the moment of onset there was no violent exertion on her part, but only some slight movement of the lower limbs.

Dr Lackie replied.

VII. *Dr Milne Murray* read his communications on FORCEPS WITH ADJUSTABLE AXIS-TRACTION, and on FORCEPS FOR OCCIPITO-POSTERIOR POSITIONS OF THE VERTEX.

Dr Haultain congratulated Dr Milne Murray on his interesting and instructive paper, which was fraught with so many points of practical value, and which were considered with such characteristic ingenuity that it was quite impossible to thoroughly appreciate or criticise on such short acquaintance. There could be little doubt that the forceps described were a distinct advance in the perfection of the instrument, both in the ease in which traction in the varied axes of the brim could be performed, and also in the delivery of occipito-posteriors, where from the occipital grip the normal mechanism of flexion was assisted. It certainly appeared to one at first that, perhaps, they were too scientific, and entailed for their practical working a perhaps more than ordinary appreciation of the angles of the plane of the brim and their corresponding axes. But when it was considered that it was unnecessary to vary the line of traction unless one felt inclined, and by fixing the handles at normal one had an ordinary pair of forceps, it certainly was no argument against, but strongly for, the instrument. He had always in the delivery of occipito-posterior positions by forceps tried to grip the head as far back as possible, but with ordinary forceps the pelvic curve was too great, and the liability to slipping of the blades in the posterior position was increased. The straight forceps Dr Murray had devised were unquestionably a distinct improvement, in that they made a posterior grip a necessity, and, as had been shown, did not require to be reapplied if anterior rotation occurred. While on the question of axis-traction forceps, however, he would like to say that he did not entirely agree with Dr Murray that in traction one should always pull with the traction rods parallel with the application shanks, as not only theoretically but practically he had frequently found the adoption of this rule wrong. It was specially apparent in occipito-posterior positions which were extended high in the pelvis, and in this attitude gripped by the forceps. As was theoretically evident, whenever traction was now performed and descent of the occiput or flexion commenced, the application handles which were fixed to the head by the blades were naturally thrown forward in such a manner that the curved line of traction certainly could not be with the traction rods parallel with the application shanks. Thus, when we came to the outlet where, in these persistent "face to pubis" cases, the movement of flexion was extreme, the application handles frequently pointed straight up the abdomen, altogether too far forward as a guide for the line of traction. In these cases, it seemed to him either of two courses was open,—to remove the blades and reapply, or to judge of the axis of the outlet for one's self, and pull in that direction. Times and again had he met with such cases where, pulling with the traction rods parallel to the application shanks, the head was simply pulled against the pubis and delivery impossible, while by reapplying or pulling in the axis of the outlet delivery was easy.

ROYAL MEDICAL SOCIETY.

Jan. 31.—Dr Kenneth Maclean in the Chair.

Mr H. C. Colman described a case of Ascites occurring in a boy aged 3½ years, who also presented peculiar heart symptoms.

The case was discussed by *Drs Macrae Taylor*, *Maclean*, and *Alexander*, and *Mr Ross.*

Dr Bowes explained his method of making permanent specimens of Renal Tube-casts for the Microscope. He described the various kinds of casts, such as the hyaline, the fatty hyaline, the fatty epithelial, and blood casts. The urinary sediment was first well precipitated in a conical glass, or centrifuged, and then some of it stained with osmic acid and picrocarmine, and mounted in Farrant. On one occasion he had found in a urine, along with purulent material, striped muscle fibre, which must have come from an abscess adherent to the bladder and opening into it. There was no chance of external contamination of the urine, for he had got it direct into the urine glass. He dwelt on the importance of preserving specimens of casts at various stages of a case of Bright's disease, by comparison of which they were enabled to obtain a clearer idea of the progress of the case. He intended presenting several specimens of casts to the Society's museum.

Drs Andrew Balfour, *Macrae Taylor*, and *Maclean* discussed the communication, and thanked Dr Bowes.

Dr G. R. Livingstone's dissertation on Diabetes Mellitus was then read, in the absence of the writer, by *Dr Macrae Taylor.* A typical case was first described. The disease was, he said, known to the ancients, including Celsus and Galen, as a polyuria with rapid emaciation. It was not, however, until 1675 that Willis drew attention to the glycosuria. About a century later Dobson pointed out the excess of sugar in the blood; and in 1810 Latham divided diabetes into the two types—mellitus and insipidus. In 1881 attention was drawn to the condition of the pancreas as a possible factor in the causation. The geographical distribution of the disease, and the mortality from it, which was said to be increasing, were considered—the latter with regard to age and sex; also the pathology and various theories as to etiology, its relation to gout and nervous conditions being noted. In conclusion, clinical history and treatment were dealt with.

Mr Brunton Blaikie held that the increased mortality was only apparent, and the result of its being better recorded.

Dr Bowes discussed the ætiology of the disease, referring to its association with abnormalities of the pituitary body and acromegaly, and recalled the case of a man in whom it was associated with cancer of right pleura. Possibly the sympathetic was infiltrated and destroyed in some places. As for treatment, good results had been obtained with uranium nitrate. He referred to acetonæmia and the tests for diacetic acid and acetone. He had seen six cases that winter, in all of which he found a trace of acetone, in some also diacetic acid. For acetonæmia transfusion of saline or alkaline fluid had been recommended.

Messrs Knox, Ross, M'Kechnie, Goodall, and *Finlay* also spoke.

Dr Macrae Taylor, in reply, referred to Dr Milne Murray's experiments at the Maternity Hospital. In no case was dextrose or levulose found. Dr Croom had recorded glycosuria in a case of abdominal tumour. Immediately after operation the glycosuria diminished, then rose, then disappeared.

Feb. 7.—Dr Bowes in the Chair.

Mr Jagger showed a man suffering from Locomotor Ataxy, and described the symptoms, which included remarkable athetoid movements of hands and fingers.

Dr Dawson Turner gave a highly interesting Lantern Demonstration of Shadow Photographs taken by the Röntgen Process. He explained how the light was produced in a glass vacuum-tube containing a small aluminium window, placed opposite the kathode, through which the X-rays could pass. Glass was opaque to them, but they could easily pass through the wooden slide covering the sensitive plate, a vulcanite slide, however, being preferable; and thus a shadow of any object placed on the slide between it and the source of the rays was cast on an ordinary photographic plate, with the result that the thicker and denser parts, being more opaque to the light, came out dark, the others appearing in a lighter tint, or hardly at all. One required electricity of very high potential, a million volts or more, and also a highly exhausted vacuum-tube. A great drawback at present was the long exposure needed—as a rule not less than half an hour, occasionally fifteen minutes. It depended on the object. The hand, *e.g*, took longer than a simple coin. They used vacuum-tubes made by Crookes of South Africa, which were very expensive owing to the great demand. The process of exhaustion took a long time, and the vacuum was soon impaired by use. His own idea was that it might be better to continue exhausting with a Sprengel pump while the photo. was being taken. He threw on the screen, first, a photo. of a lady's hand with a ring upon it, showing a sesamoid bone of the thumb, also the transparency of the articular cartilages; next, a foot. He thought he was the first to take the foot. Owing to its thickness it required a long exposure or powerful discharges. The terminal phalanx of the little toe was seen to be turned inwards, and he had come to the conclusion that this was normal. A sesamoid bone of the big toe, being placed somewhat laterally, also appeared, and the thick skin on the toes added a deeper shade. They could also see the medullary cavity of the fifth metatarsal in a lighter tint. Three cigars in an aluminium case came out distinctly, showing paper wrappers and mode of winding. Photos. of knives, pencil cases, coins in purse, and razor in case were next shown; also a frog taken by Mr Swinton of London. He himself had taken a photo. of a frog that day, showing quite plainly the pelvic girdle, urostyle, and individual vertebræ. He now showed a photo. of his own wrist. Sir Wm. Turner, on seeing it, had remarked the absence of the cuneiform. It evidently did not occupy the position usually described. The other bones were clearly visible. This method would show well the exact position of the patella in the various stages of flexion of the knee.

Dr Macrae Taylor remarked on the possibly epoch-making nature of Röntgen's discovery. He moved a very hearty vote of thanks to Dr Dawson Turner for his kindness in consenting, on very short notice, to deliver this interesting demonstration.

Dr Scott Skirving, in seconding, referred to possible applications of the method to practical surgery.

Dr Alexander inquired whether the degree of impediment to the rays, as indicated by depth of tint in the photo., was in exact proportion to the thickness and density of the material traversed, or depended on other qualities.

Dr Hutchison also spoke.

Dr Dawson Turner, in reply, said that colour had an effect as well as density. He had recently been experimenting with solutions of various colours. Mercury was dense enough, and yet it was very transparent to the rays.

Feb. 14.—Dr Maclean in the Chair.

Dr H. J. F. Simpson described three cases of Divided Tendons:—(1) That of a girl aged 19, who was admitted with a deep palmar wound, the result of the bursting of a lemonade bottle; (2) that of a youth who, while leaning against a plate-glass window, had slipped, and, in trying to save himself, had broken the window and cut his right wrist; (3) that of a boy aged 11, who had received a palmar wound from the breaking of a bottle which he was rolling along the street. The last two patients were shown. The method of uniting the divided tendons was described, and the after-treatment detailed, special emphasis being laid on early massage and passive exercise as a means of preventing stiffness. In the last case a burn was suffered to occur on one finger tip owing to loss of sensation. He also described the case of a woman aged 25, a considerable part of whose lower jaw had been removed for cystic sarcoma of about seven months' duration. She had completely recovered, and had been fitted with a false jaw with which she could masticate quite well. He described, lastly, his method of skin-grafting an extensive burn, which had now almost healed. A prepuce from a circumcision case had afforded them a plentiful supply of grafts.

Mr Armour, in opening the discussion, referred to a case in which Mr Caird, after removing a large wen, had successfully grafted epithelium from the thigh on practically bare bone. Silver paper was used as a dressing.

Dr Laing said he had seen fifteen cases of burn during the last three months. In one the burn extended from axilla to trochanter. He discussed the advisability of scraping the raw surface.

Dr Giles referred to two cases of divided tendons occurring in his own practice. Fœtal skin and that of sucking pigs had been recommended as specially suitable for grafts. The Americans had suggested the use of cuticle raised by a blister.

Mr Blaikie mentioned the use as a graft of the membrane lining the shell of an egg. Peroxide of hydrogen would stop hæmorrhage after scraping.

Messrs Struthers, Ross, and M'Nair Scott having spoken, *Dr Maclean* cited a case of tertiary syphilitic ulcer of the scalp on which skin was grafted. The grafts, although placed on bare bone, took admirably. In another case a tertiary ulcer of the acromion was skin-grafted with good effect.

Mr Williams was of opinion that granulations were quite as good as a scraped surface.

Dr D. A. Welsh gave a communication on The Relation of Bacillus Coli Communis to the Typhoid Bacillus, a subject which, he said, was of interest, not only because these organisms presented so many points of resemblance in morphological and biological characters, but also because they might occur within the body in closely related conditions. The bacillus coli was normally present in the human intestine within a few hours after birth and throughout the rest of life, but it might become pathogenic. Certain conditions of cholera nostras and of cholera infantum had been shown by several observers (Thoinot and Masselin, *Précis de Microbie*, 1893) to be due to this organism. It was the most frequent cause of peritonitis consequent upon an intestinal lesion, whether with or without actual perforation, *e.g.*, strangulated hernia. It was very often the cause of suppuration in the liver and biliary passages, and in the kidney, pelvis, and bladder. It had also been found in broncho-pneumonia, pleurisy, meningitis, and endocarditis, when associated with one of the lesions above noted. Experimental inoculation had been shown to produce local inflammation and suppuration, and, more recently, also paraplegic phenomena, associated with lesions in the spinal cord. The latter fact afforded some explanation of those conditions of paraplegia in man subsequent to cystitis (Thoinot and Masselin, *Revue de Médecine,* 1894, quoted by Dr Muir in *Practitioner*, December 1895, where also other references were given). The typhoid bacillus also, in addition to its specific relation to enteric fever, had definite pyogenic properties. The occurrence of suppuration in various positions during the course of enteric fever had long been observed (*vide* Thoinot and Masselin, *Précis de Microbie*, 1893),—*e.g.*, miliary abscesses in the kidney, abscess of spleen, suppuration of biliary passages and suppurative periostitis, orchitis, pleurisy, parotitis. Two objections, however, had been urged against the pyogenic power of the typhoid bacillus—(1), That the organisms found in the above conditions were more probably the bacillus coli, which had been mistaken for the typhoid bacillus; or (2), that pyogenic cocci had originated the suppuration, but had disappeared earlier than the typhoid bacillus. Quite recently Dinochowski and Janowski (*vide* Ziegler's *Beiträge für Path. Anat.*, 1895) had done much to elucidate these points, and the results of their elaborate series of experiments showed—(1), That in certain conditions inoculations of pure cultures of typhoid bacilli in dogs and rabbits would produce suppuration; and (2), that, when injected along with pyogenic cocci, the typhoid bacilli were the first to disappear from the pus. The separation and identification of two organisms so closely related became therefore a matter of the first importance. Any distinctions, however, founded on their microscopic appearances, even on their relative motility and the number and characters of their flagella, were at best uncertain. It was on modes and conditions of growth that one had to rely. On ordinary media, *e.g.*, glycerine agar, gelatine peptone, and potato, the differences in mode of growth were usually very slight, though affording important confirmatory evidence. More marked distinctions were met when the medium contained lactose, glucose, etc. Thus, when grown in sterilized milk, the typhoid bacillus produced no appreciable change, while the bacillus coli caused rapid coagulation. When shaken up in lactose, gelatine, or agar, or even ordinary gelatine peptone, bacillus coli produced bubbles of gas in less than twenty-four hours; the typhoid bacillus did not. If litmus were added along with lactose, then, besides formation of gas, there was change of blue to red in the case of bacillus coli, but not in that of typhoid. Another valuable series of distinctions depended on the addition of some inhibitory substance to the medium. The presence of $\frac{1}{5}$ per cent. carbolic acid would prevent the growth of all organisms met with in the fæces, except that of typhoid and bacillus coli, which could therefore be separated from the rest. A method of great promise had lately been devised by Elsner (*vide Zeitschrift f. Hyg. u. Infections Kr.*, xxi. p. 1; quoted in *La Semaine Médicale*, January 15, 1896), who found that a gelatinized emulsion of potato to which 1 per cent. of potassium iodide had been added, would permit the growth from fæces of only the bacillus coli and the typhoid bacillus, and that in forty-eight hours the colonies of each were perfectly characteristic, and could thus early be identified. It had also been found that broth containing 1 of formalin in 7000 would permit growth of bacillus coli, but not that of typhoid. A further differentia was based on the fact that bacillus coli produced indol in its growth, which gave a definite reaction, while the typhoid bacillus did not. Some varieties of bacillus coli, however, gave the indol reaction but feebly. In illustration of his communication Dr Welsh showed a large number of tubes containing cultures of the organisms described.

It was discussed by *Dr Greig* and *Messrs Blaikie* and *Williams.*

Dr E. D. W. Greig read his dissertation on The Principles of Antitoxin Treatment, in which he dealt fully with recent advances. Reference was made to Jenner's accidental discovery of the principle, and its elaboration by Pasteur in his treatment of rabies by attenuation of the virus. Behring in 1890 separated the toxins from the organisms that produced them, and also found that the blood-serum of immunized animals had, when injected, distinct protective powers. His method was to supply the animal with antitoxin, and might be called that of "passive" immunity as opposed to the "active" immunity of Pasteur, who stimulated the animal to produce its own antitoxins. Various theories as to the nature and origin of the toxins were considered. Ehrlich had obtained in animals a fairly high degree of immunity, both local and general, to the action of two vegetable substances—ricin and abrin—and found that the blood of such immunized animals had distinct antitoxic properties,—only, however, in relation to the special toxin. Immunity was also conferred on their young through the milk. Theories as to the nature of immunity were discussed, and special reference was made to Hankin's work on what he called defensive proteids; also to that of Metschnikoff, Buchner, Pfeiffer, Hunt, Roux and Yersin, and, lastly, to the valuable researches of Professor Fraser on snake venom, the controversy as to whether snake blood was toxic or antitoxic being alluded to. Antitoxins in general probably acted not so much by direct chemical antagonism as by stimulating the body-cells to resist the poison by a vital reaction which probably varied according to the nature of the poison. Phagocytosis was a subordinate feature, but might play an important local *rôle.*

Dr Welsh remarked that snake venom, if injected alone, produced local necrosis, but if mixed with the antitoxin before injection, produced no necrosis. The action might be partly chemical as well as vital.

Mr Williams and *Dr Alexander* also spoke.

Part Fourth.

PERISCOPE.

MONTHLY REPORT ON THE PROGRESS OF THERAPEUTICS.

By William Craig, M.D., F.R.S.E., Lecturer on Materia Medica, Surgeons' Hall, etc., etc.

The Serum Treatment of Diphtheria.—Adolph, of V. Noorden's clinic (*Deut. Med. Woch.*, January 16, 1896), reports the results of 100 cases thus treated. They were not as favourable as those of other hospitals, perhaps because formerly only the most severe cases were admitted. Recently better results have been obtained. Of the 100 cases, 20 died; 27 were tracheotomised, with 12 deaths; of the 73 non-tracheotomised, eight died (11 per cent.); eight of the tracheotomised cases were moribund on admission. In all the cases there was marked clinical evidence of diphtheria, and in 93 the presence of Lœffler's bacillus was demonstrated. In the remaining cases there was evidence enough to show that the disease was genuine diphtheria. There was paralysis in 22 cases. Paralysis of deglutition occurred in 17, with 9 deaths; partial paralysis of the palate in three; ocular paralysis in one; laryngeal paralysis in one and ataxia in six cases; albumen was present in 58, and marked nephritis in six cases, four of which died. In one case there was a hæmorrhagic nephritis at the beginning of the diphtheria. In three cases there was severe cardiac weakness, and these all died. The diphtheria was complicated by measles in 12 cases. There was incontinence of urine in three cases, probably due to paralysis of the bladder. In one case a relapse was noted after fourteen days. A considerable degree of laryngeal stenosis disappeared in eight cases without tracheotomy. An eruption resembling urticaria was seen in 27 cases. The author gives details of three cases in which there were pains in the joints, apparently in connexion with the serum treatment. In one case there was subsequent fever lasting one to two days, also to be attributed to the serum. Considerable quantities of serum were used, rarely less than 1000 units. More recently the author has mostly used only about 600 units.—*The British Medical Journal*, February 22, 1896.

Serum Therapeutics of Leprosy.—Carrasguilla (*Sem. Méd.*, January 8, 1896) has communicated to the National Academy of Columbia the successful results obtained by him in cases of leprous serum. He now recounts the effects of this remedy (the method of preparation of which is not given) in three cases of tubercular form of the disease. In the first patient the disease was far advanced, but under treatment the face, which was red, swollen, stretched, and leonine, became pale, while the skin regained its smoothness and pliability. At the same time the tubercles disappeared, leaving only yellowish stains. It was noticed that each injection evoked hypersecretion from the skin and the mucous surfaces, appearing to exert a special influence on the bronchial mucous membrane. The patient also regained appetite and power of sleep. In a second instance the tubercles, instead of disappearing, as in the other, by absorption or desquamation, softened, suppurated, ulcerated, and eventually cicatrised. Where œdema was present it disappeared with such rapidity that in five days no trace remained. In the third case the disease was of a mixed type, the nervous symptoms predominating. This was the only one in which the author observed the complete return of sensibility in an anæsthetic patch, the skin remaining healthy. He has in all treated fifteen cases of the disease with the serum, and in no one of them has any further manifestation of the action of the bacillus occurred after the first injection. He concludes that this remedy restores sensibility more or less rapidly according to the severity of the peripheral nerve lesion. Stains lose their colour without disappearing completely, œdema vanishes more or less rapidly, and with its removal the skin returns to its physiological condition. Tubercles of the mucous membranes are cured in a similar manner to those of the skin, and the mental state is improved no less than the physical.—*British Medical Journal*, Feb. 29, 1896.

HORSES' SERUM AS A GENERAL TONIC.—J. M. Lacruz of Barcelona (*Arch. de Gin. Ostet. y Pediatria,* December 25, 1895) has tried the effect of serum drawn from a healthy horse on several children in his wards. Doses of 3 to 5 c. cm. were injected daily, and repeated every day for three or four weeks. The serum seemed to the author to act as a most powerful tonic. The red corpuscles increase in number, weight is gained, and the child visibly becomes stronger. There is no outward secondary effect except slight rise of temperature and some acceleration of the pulse; there is no erythema and no albumen. A trifling epithelial deposit seen in the urine indicates slight irritation of the kidney, and the urine becomes more acid. These phenomena, however, are merely transient. The good effects of the injections are quickly manifested, cases of athrepsia in particular are speedily benefited and the cure is maintained. Sixteen cases of chorea treated in the manner described were cured in a period of fifteen days on the average.—*British Medical Journal,* March 7, 1896.

OCCASIONAL PERISCOPE OF DERMATOLOGY.

By W. ALLAN JAMIESON, M.D., F.R.C.P. Ed., Physician for Diseases of the Skin, Edinburgh Royal Infirmary; Lecturer on Diseases of the Skin, Edinburgh School of Medicine; late Consulting Physician to the Edinburgh City Hospital for Infectious Disease.

THE THYROID TREATMENT OF PSORIASIS.—Thibierge, induced by the divergent results obtained by most of those who have, following Bramwell, tried this, and believing that the remedy deserved a more rigorous testing than it seemed to have had, has administered it to eleven men suffering from undoubted psoriasis. In all these cases he gave the uncooked gland, fresh minced and in warm soup. The duration of treatment varied from eighteen to fifty-four days, and the daily dose from 2 to 7 grammes, exceptionally even 20. The effects on the pulse, temperature, and digestion were such as other observers have remarked. In one, a confirmed alcoholic, who during the course of treatment by thyroid succumbed to subacute alcoholic intoxication, the gastric disturbance was accompanied by jaundice due to retention, which necessitated temporary suspension of the remedy. In some of those treated there simply resulted a diminution in redness, without modification in the scales. The result was *nil*, though the physiological symptoms of thyroidism were well pronounced. The effect was also *nil* at the end of fifty-four days of treatment, but this was an epileptic, individuals in whom Bramwell had already pointed out that it is less active. In eight cases there was a manifest amelioration; many of the patches quite disappeared, yet none could be said either to be cured, or even to be completely blanched. It may be asked if there is not an advantage in employing the thyroid medication as an adjunct to external methods, as these in the majority of the cases freed the patients more speedily from their disease than would have been the case had the lesions not been modified by the thyroid. Thibierge, however, holds that the inconveniences associated with its administration would make him reject the combined mode. He regards it as a means only to be resorted to after the failure of all others, with all due reserves and precautions. It is, so to speak, a desperate remedy, but it is not the only one of the kind in the therapeutic arsenal.—*Ann. de Dermat. et de Syph.*, Paris, Nos. 8 and 9, 1895.

AGMINATE FOLLICULITIS OF PARASITIC ORIGIN.—Hartzell records a case of a lesion very closely resembling tinea kerion, but affecting the leg. Six weeks before, the man, who was aged 32 and employed on a railway, came under treatment. He had slightly injured his leg above the malleolus, but this rapidly healed. Ten days later a pustule formed a little above this, and was followed by others which coalesced. New isolated pustules continued to appear. When seen there was a palm-sized patch, irregularly oval, raised above the surrounding parts, and covered with a scanty, yellowish-grey soft crust, which could easily be removed. Beneath this crust was a bright red, uneven, coarsely granular surface containing numerous small openings from which slight pressure caused a scanty sero-purulent fluid to appear. There were also smaller and similar patches on the leg. Close examination showed that they were made up of swollen and inflamed hair follicles, from most of which the hairs had fallen. The disease was attended by paroxysms of intense itching, and the leg was at times so painful that walking was difficult. Section of excised pieces showed round spores and mycelial threads in a pus-lined cavity near a hair follicle. Staphylococci were also found. The fungus presented the characters of the trichophyton, though the individual elements were larger than ordinary. Under the use of a sulphur ointment, 30 grains to the ounce, improvement soon took place. The duration of the disease was ten months, during half of which the patient was unable to attend to his duties from inability to stand or walk. At least two-thirds of the surface of the leg were invaded. There was no eventual scarring nor loss of hair. No source of infection could be discovered. Hartzell desires to direct attention to the value of the triple staining fluid known as the Bioni-Heidenhain in the examination of sections for the trichophyton. He expresses a suspicion that the agminate folliculitis of French authors is most probably a deep trichophytosis such as has been described, the fungus having been overlooked through lack of a proper selective stain.—*Journal of Cutaneous and Genito-Urinary Diseases,* Nov. 1895.

ERYTHEMATOUS ERUPTION FROM THE USE OF BORIC ACID.—Fordyce relates a case where a hospital patient under his care was given boric acid in doses of 30 grains daily for a month for cystitis. At the end of that time she developed a multiform erythema of the trunk, chiefly of the back and shoulders. The eyelids were painful, and there was such marked œdema of the upper lids as to close them. There was also conjunctival inflammation and photophobia. Not suspecting the boric acid, its use was continued. The erythematous eruption in the meantime spread over the trunk and upper extremities, and the painful œdema of the eyes increased until the lids became almost as hard as the induration of the initial sclerosis of syphilis. The boric acid was then discontinued, and cold applications made to the eyes. Within a short time the œdema of the lids began to grow less, and within a week had entirely vanished, the erythema passing away at the same time. The peculiar solid œdema is the symptom which has not previously been recorded as due to boric acid.—*Journal of Cutaneous and Genito-Urinary Diseases,* December 1895.

Part Fifth.

MEDICAL NEWS.

PROFESSOR ANNANDALE IN SOUTH AFRICA.

OUR readers will be glad to learn that Professor Annandale has returned from a visit to the Cape in much improved health. Advantage was taken of Prof. Annandale's visit to South Africa by old students of the University of Edinburgh and Edinburgh School of Medicine to entertain him at a dinner given at the Civil Service Club on March 2. There were present: Dr Dodds (in the Chair), Prof Annandale (the guest of the evening), Drs L. Beck, Edington Eyre, Fuller, J. Hewat, W. Hewat, M. Hewat, B. Hewat, Von Landsberg, sen., Von Landsberg, jun., F. Murray (Durbanville), J. Neethling (Stellenbosch), Roux (Malmesbury), J. Petersen, Scholtz, Silke, Todd (Robben Island), Jane Waterston, and Arderne-Wilson.

The Chairman proposed the toast of "The Queen," which was duly honoured.

The Chairman next proposed the toast of the evening, "Professor Annandale." He said there could be no doubt of the warmth of their welcome to Professor Annandale. They welcomed him as a distinguished representative of a distinguished line of Edinburgh surgeons, and as one who had worthily upheld the high traditions of the Edinburgh School of Surgery for five and twenty years. They welcomed him, too, as a teacher and a friend, to whom many of them owed a debt of gratitude they would never be able to repay. And they welcomed him, perhaps above all, as a worthy representative of their *alma mater*, the University of Edinburgh. What happy memories and associations those words, "Our Alma Mater," called up! Time failed him to dwell on them, and as he saw many men at that festive table eager to be on their feet, he would just say that it was a South African tradition that those who had once touched our shores were bound by fate to return at some future time. He hoped Professor Annandale would bow to that fate, and return once more to us. Not only that, but that the effect of his visit would be that other brother professors would follow his example. They would look forward with satisfaction to a regular epidemic of Edinburgh professors.

The toast was drunk with cheers, the company singing "For he's a Jolly Good Fellow."

Prof. Annandale said:—"Fellow Graduates of the University of Edinburgh, fellow Licentiates of the Royal College of Surgeons,—though the primary reason of my visit to this country has been personal suffering, yet the warmth of welcome I have received has both astonished me and made my sojourn a delightful experience. This I have set down to my being a member of the University of Edinburgh, and a link with what are the good old days to you all, and this feeling has shown me emphatically the affection graduates still retain to their *alma mater* and their teachers. Perhaps the teachers do not come so much in contact with their students as could be wished, but this is the result, not of a lack of will, but of a lack of opportunity, and it behoves us to find a remedy. Notwithstanding the uncomfortable experiences of the examination-room, it was wonderful how soon these were forgotten and how long the good outcome of them was remembered. One surgeon up-country told me that he was reproved by me for making amputation flaps too short, and from that day to this, if he erred, it had always been on the safe side in having them long enough. But, perhaps, the most paralysing evidence of goodwill I have had was at the dinner given to me in Johannesburg, when I heard a loud voice from somewhere down the table saying, 'Thomas, you plucked me, but I forgive you.' It has greatly pleased me to see the position graduates of the University of Edinburgh are taking in this country, especially the present Colonial Secretary of this colony, who, I have no doubt, will do good work for the country. I also thank the graduates of Edinburgh for the courtesy that has been shown to my wife and daughter during their residence here I believe this country has a great future,—that one day it will be an united South Africa. My only complaints are the heat, for which, however, the graduates of the University of Edinburgh are not responsible, and the price of drinks; but, as I had not to pay for these, I did not personally feel that. This is not, I sincerely trust, my last visit to South Africa. Next time I hope to bring my boys, who may settle down here, and I can wish no better fate for them than that they will become husbands of some of my pupils' daughters. I thank you again for the kind reception you have given me."

The company broke up after many other toasts and a very pleasant gathering, Professor Annandale shaking hands and wishing "good-bye" all round.

University of Edinburgh.—Second Professional Examination, April 1896.—The following is the Official List of Candidates who have completed the Second Professional Examination for the degrees of M.B. and C.M. (old Ordinance):—F. T. H. Adamson, H. L. Apthorp, A. B. Blair, E. L Borthwick, C. W. Breeks, F. W. Broadbent, D. A. Cameron, M. N. Choudhuri, A. W. G. Clark, D. E. Dickson, J. H. S. B. Douglas, D. L. Fisher, R. M. Gibson, W. H. Goldie, T. P. Greenwood, James Grieve, F. S. Harper, A. G. Hayden, Robert Irvine, A. L. de Jager, Leslie Kingsford, J S. Lyle, B. A M‘Gregor, J M. Macgregor, R. F. Mudie, B. N. Mullan, Sarat Mullick, W. D. Osler, D. J. Peirson, G. M‘D. Pratt, Oswald Raitt, C. R. Scott, D. C. Sethna, T. B. Shoolbread, E. L. Starmer, J. F. Strickland, J. T. Titterton, W. A. C. Ussher, Henry Waters, G. F. Waterston, and M. B. Wright. The following have completed the Second Professional Examination for the degrees of M.B. and Ch.B. (new Ordinance): -John Alcindor, A. J. T. Allan, James Allison, A. S. Allum, J. R. Anderson, H. L. S. D. Belasco, William Bell, J. M Bowie, Stanley Branch (with distinction), C. S Brebner, R. N. Brebner, H. H. Broome, J. Burnet (M.A.), J. Cameron (with distinction), J. A. Craig, W. Craig, R. Cumming, J. M. Cuthbert, L. J. M. Deas, G. Dick, R. J. Dick, W. H. Dickinson, J E. Dods, F. H. Dommisse, W. S. Eaton, D. Forbes, A. D. Fordyce, A T. Gailleton, R Gibson, J. D. Gilfillan, A. Gilmour, A Goodall, A. M. Green, W. G. Heath, T. E Hincks, H. T. Holland (with distinction), C. A. B. Horsford, B. S. Hyslop, W. J. Jones, A. H. Keun, G. E. J. King, G. de Labat, E. W. Lewis, George Lyon (with distinction), J. C. M‘Conaghey, Edward M‘Culloch, W. O. M‘Donald, John M‘Gibbon, J. W. M‘Intosh, D. V. M‘Intyre (M.A.), W. E. M‘Kechnie, R. W. M‘Kenna, J. W. M‘Kenzie, T. D. M‘Laren, J. W. Mathewson, J. A. Murray (B.Sc.), J. H. P. Paton, W. M. Paul (M.A.), C. M. Pearson, G. B. Pemberton, A H. Pirie, Robert Pugh, J. A. Raeburn, H. H. Roberts, A. A. Robinson, A. C. Sandstein (with distinction), R. F. M‘N. Scott (with distinction), J. A. C. Smith, Ward Smith, G. H. Stewart, Henry Taylor, David Wardrop, W. C. Wilson, and G. J. Young. The following Candidates have passed in Anatomy and Physiology of the Second Professional Examination:—W. M. Barker, Robert Bruce, Robert Crawford, E. F. Cyriax, C. L. Dunn, R. W. T. Ewart, F. B. Feast, J. M. Fraser, H. E. Gibbs, A. A. Gunn, W. E. Hutchison, P. L. M‘All, A. C. M‘Gilchist, Robina M‘Gregor, G. A. Mackay, William M‘Kay, M. B. Marshall, T. R. Matthews, W. P. Meldrum, Faith Philpot-Crowther, J. H. Rhodes, Edgar Somerville, W. E. Tellet, R. le Verley, Henry Wade, and D. C. Wallace. Third Professional Examination.—The following have passed the Third Professional Examination for the degrees of M.B. and Ch.B.:—B. R. Aldren, V. G. Alexander, T. R. W. Armour, E. P. Baumann, Thomas Biggam, R. B. Black, H. F. Boland, William Burns (M.A.), R. C. Cunningham, David Clow, C. M. Cooper (with distinction), L. W. Davies, James Donaldson, G. L. Findlay, James Forrest, J. S Fraser, George Gatenby, Andrew Gibson, William Hamilton (with distinction), Rowland Hill, G. B. Hollings, Patrick Kinmont, A. B. MacCarthy, T. J. T. M‘Hattie, J. L. M‘Innes, John Malcolm, William Martin, J. D. S. Milln, F. W. More, R. G. Riddell, J. D. Slight (M.A.), W. M. A. Smith, W. R. Somerset, J. W. Struthers, G. A. Vincent, W. M. Wilson, and A. G. Worrall. Robert Sproule has passed the First Professional Examination, in addition to the Candidates whose names have already been published.

The Annual Inter-College Golf Match was held at Gullane on March 25th, and resulted in a win for the Physicians by the narrow majority of 2 holes. Those who took part were,—*For the Surgeons*—Drs R. H. Blaikie, D. Wallace, G. Mackay, J. M. Cotterill, D. Menzies, F. Cadell, Dunsmure, Shaw M‘Laren, Russel-Wood, Thatcher, Hodsdon, Alexis Thomson, Wyllie Clarke, G. Berry, C. M‘Gillivray. *For the Physicians*—Drs F. W. N. Haultain, T. R. Ronaldson, A. Thomson, G. M. Robertson, F. Boyd, R. Muir, R. Thin, H. M. Dunlop, J. Carmichael, T. Thyne, C. M‘Lagan, Buist, N. Walker, Hardie, Gulland.

In *Science* (October 11, 1895), there was a very interesting paper, by R. W. Boyce and W. A. Herdman, on "Oysters and Typhoid." They show that the typhoid bacillus does not flourish in clean sea water, that oysters show the bacillus in the pallial cavity and rectum fourteen days after infection, but that they can be subjected to a natural process of cleaning, and freed from pathogenic organisms. This is done after the method employed in the "Bassins de dégorgement" of the French ostreaculturists.

Tabloids of Caffeine Co.—We have received from Burroughs, Wellcome, & Co. specimens of these "Tabloids," each containing

—Caffeine 1 gr., and Antipyrin 5 grs. These tabloids will be found very useful. They form an excellent combination of two very useful drugs.

TABLOIDS OF OXALATE OF CERIUM.—These tabloids have also been sent by Burroughs, Wellcome, & Co. Each contains 5 grs. of Oxalate of Cerium. They form a very convenient preparation for the administration of this drug.

THE BALL-NOZZLE FOUNTAIN SYRINGE.—This syringe for vaginal and rectal use is the property of the British-American Ball-Nozzle Company, 52 Oxford Street, London, W., and is an adaptation of the ball-nozzle principle to the douche. This principle has been largely adopted in America for the extinguishing of conflagrations, for it gives a very large fan-like spread to the water propelled from the tube, and so protects from both fire and smoke. In its application to the vaginal douche the benefit of a large spread of water at a moderate pressure within the canal in place of a single forcible jet is obtained. It is claimed for it that it "has come into universal use in the United States, superseding every other form of syringe." The ball-nozzle action is certainly one which commends itself for both vaginal and rectal irrigation.

OBITUARY.

THE LATE DR A. FLEMING WOOD.

IT is with much regret that we record the death, at the Edinburgh City Hospital, on the 21st ult., of Dr A. Fleming Wood, the Medical Superintendent of that Institution. The announcement came with startling suddenness to the medical profession in Edinburgh and its vicinity, to the members of which Dr Wood was well known, and by many of whom he had been seen recently to all appearance in the best of health. Dr Wood was seized on the 17th ult. with symptoms of what he thought to be influenza, but which speedily developed into pneumonia. His friends Drs Muirhead and Affleck and Dr Henderson, resident medical officer of the City Hospital, were constant in their attendance on him, but the disease assumed from the first a grave aspect in the form of marked cardiac weakness, and symptoms of hyperpyrexia becoming superadded, his strength rapidly gave way.

A native of Forfarshire, Dr Wood began life in a mercantile house in Dundee, but, after some years resolved to enter the medical profession, and came to Edinburgh to study at the University. Before the completion of his curriculum Dr Wood had displayed a special interest in the subject of fevers, and had for a length of time been diligently going round the fever wards of the Royal Infirmary. At that time (1878) it was not always easy to secure a house physician for this department, and those in charge had occasionally to be content with a student who had not yet qualified. It was thus in the case of Dr Wood, who held the post for some months prior to his taking his L.R.C.S., which he did in 1879, graduating M.B. at the University in the following year.

On the removal of the Royal Infirmary to Lauriston, the Managers, having come under obligation to the City Authorities to provide seventy odd beds for the treatment of fever cases separately, devoted a portion of the old building in Infirmary Street to this purpose, and continued for five years to carry on this as a fever hospital, the wards being under the charge of the assistant physicians of the Infirmary, who at that time numbered only two—Drs Wyllie and Affleck—to whom subsequently were added Drs Smart and James.

At a later date negotiations were entered into between the Infirmary Managers and the Municipal Authorities, with the result that the city agreed to undertake the whole duty of providing hospital accommodation for infectious diseases, and, having purchased the property from the Infirmary, took over in 1885 the fever hospital, which then became the City Hospital, under the direction of the Medical Officer of Health and the Public Health Committee of the Town Council.

Dr Wood was appointed Medical Superintendent, and a consulting physician (at first Dr Allan Jamieson, and subsequently Dr Muirhead who still holds the office) was associated with him in the medical oversight of the Hospital. During the eleven years of its history the City Hospital has had an admirable record of good useful work, and its extension from seventy to over three hundred beds is no small testimony to public confidence in its management, and the satisfactory results of treatment it has been able to produce. By all who have means of knowing, it will be readily admitted that much of the credit of this success belongs to Dr Wood, who, entering upon the work with an excellent training, and with full mastery of all the details, devoted himself heart and soul to carrying out the instructions of the Health Authorities of the city with the view of making the Hospital an efficient public institution. And he fortunately possessed many gifts to equip him for this important work. His knowledge of the febrile diseases was extensive and accurate, and he had laid in store, both by reading and observing, a fund of clinical information of which only those who knew him well were at all adequately aware.

It was, while he lived, oftentimes matter for regret among his friends that Dr Wood, with the knowledge of fever he possessed, did not contribute to the literature of this important class of disorders, but his innate modesty made him shrink from committing himself to writing. Certainly few knew more about fevers than he, and the results of his clinical observations were occasionally expressed in brief axiomatic terms which made them very memorable and informing to those who felt interest in the subject. With a rare combination of quiet force, gentleness, and wisdom, Dr Wood managed to carry on a work which was beset with many difficulties. The regulations of the Hospital allow of private patients being treated there by their own medical attendants, and very free access is at all times given to members of the profession who have sent in patients for treatment. All will acknowledge the unfailing courtesy, helpfulness, and willingness to oblige which Dr Wood showed to his professional brethren, while his treatment of the patients, and his consideration for, and kindly bearing to, their friends, were often made matter for remark. Extensive administrative duties fell to Dr Wood as Medical Superintendent of the Hospital, and these became from time to time seriously increased when any epidemic—such as the recent outbreak of smallpox—appeared in the community. Dr Wood's business training well fitted him for this work, and enabled him to render effective service to the Medical Officer of Health and the Health Committee in such emergencies. With all the officials of the Hospital, including the whole nursing staff, Dr Wood was a great favourite, and proved a kind friend to many of them. Behind a quiet and somewhat blunt manner there lay a generous heart, a well-stored mind (for he was a lover of books), and a keen sense of humour. But beyond all this were his inflexible integrity of character, and the high principles which were the motives of his life. His removal by death in mid-time of his days is felt as a distinct loss, especially by his many professional friends, and by those who were brought into official relations with him.

To the Public Health Department of the city and its Convener the death of Dr Wood must be a serious loss at the present time, when they are about to enter upon the building of a new Fever Hospital, in which undertaking they had counted upon much valuable assistance from the practical knowledge and experience of their Medical Superintendent.

Every well-wisher of the City Hospital must hope that in due time a worthy successor may be found to fill the important post which has been so unexpectedly rendered vacant by Dr Wood's lamented death.

ROBERT MAIN HORNE, M.D.

By the death of Dr R. M. Horne, Edinburgh has lost one of her most distinguished graduates in recent years. A native of Slamannan, Dr Horne was at school first there and afterwards at Stirling High School. Coming to Edinburgh University in 1886, Dr Horne's undergraduate career was simply a march from one honour to another; and as an indication of his ability and zeal for his work, it may be mentioned that he took during his course the Grierson Bursary on three occasions, the Dunlop Scholarship for students of the third year, as well as fully a dozen University medals.

He graduated M.B. and C.M. with first-class honours in 1890, and at the same time the Freeland Barbour Fellowship for proficiency in Anatomy, Physiology, and Pathology was awarded to him. After graduating he acted as House Surgeon to Prof. Chiene in the Royal Infirmary, Edinburgh, and then went to Strasburg, where he specially devoted himself to pathology, working in the laboratory of Prof. von Recklinghausen. After his return he was awarded the Gunning Victoria Jubilee Prize in Medicine for a thesis on the Pathology of the Thyroid Gland in Goitre.

About this time he received an appointment in Owens College, Manchester, where he remained up till the time of his death, first as Junior and latterly as Senior Assistant to the Professor of Physiology there. Only last August he received the degree of M.D. of Edinburgh University for a thesis on Muscle Plasma and its Coagulation; and recently had been engaged on experimental observations on the influence of certain salts on the coagulation of the blood.

Bright in disposition, modest and retiring, unselfish to a degree, Dr Horne was a special favourite all through his undergraduate career, and, indeed, with every one with whom he came in contact. Of remarkable ability, he was at the same time endowed with great determination, so that every one who knew him well looked forward to a particularly brilliant future. His love for his work, however, and his devotion to duty, had evidently put too great a strain on him, so that he died suddenly on the 31st ult., after about a week's illness, at the early age of 27. To his college friends, and to his colleagues in his post-graduate career, his unexpected death will be an irreparable loss.

A college colleague in Manchester writes:—

"During the four years that Dr Horne was Demonstrator of Physiology at the Owens College, he succeeded in making friends of all who knew him.

"He came among us with a reputation for exceptional ability, which was soon justified by his extensive knowledge and clear insight; at the same time, his modest, unassuming character and essentially lovable nature, soon made him a most welcome addition to the College Staff.

"As time went on his thorough knowledge of his subject, his power of work, and readiness to afford to others all the help he could, won him the respect and esteem of all his students.

"For the last few years he has been closely engaged in original research, in addition to his regular work of college teaching; and his unsparing devotion to science has probably done much to weaken a constitution far from robust.

"In addition to his M.D. graduation thesis, he had prepared several important papers for publication; the proofs of one, which will shortly be published, were uncorrected at the time of his decease.

"By his untimely death science loses a devoted and capable investigator, the Owens College one of its most promising teachers, and his many friends are left to mourn the loss of one who endeared himself to all. Those who knew him best can best appreciate the greatness of their loss."

CORRESPONDENCE.

(*To the Editor of the Edinburgh Medical Journal.*)

EDINBURGH CITY POORHOUSE,
CRAIGLOCKHART, 21*st March* 1896.

SIR,—A short time ago I was asked to perform a post-mortem examination on the body of a child, aged 2 years, who had died rather suddenly with symptoms suggestive of tubercular meningitis.

The usual pathological appearances in the cranial cavity were recognised, but what was more interesting was the condition of the abdominal contents. On examining the intestine nothing of any importance was found, the whole canal being perfectly normal in appearance, and no symptom of enteritis or peritonitis being present. The appendix at its cæcal end was very hard, evidently containing one of the date-stones so commonly found in appendicitis.

On this being removed by slitting open the end of the appendix, it was found to consist of a concretion of fæces surrounding an ordinary pin about an inch in length. The head of the pin was directed towards the free end of the appendix, and the whole concretion seemed perfectly benign in its influence.—I am, Sir, yours faithfully,

JOHN R. MUIR, M.B.

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Part First.

ORIGINAL COMMUNICATIONS.

I.—A FEW MORE WORDS ON STROPHANTHUS.

By George W. Balfour, M.D., LL.D. Ed. & St Andrews.

(*Read before the Medico-Chirurgical Society of Edinburgh*, 6*th May* 1896.)

"*Fas est et ab hoste doceri.*"

Mr President and Gentlemen,—I have to apologise for recurring to this subject so soon. I can only plead in justification the extreme importance of the matter, and the fact that the remarkable contrast that subsists between the action of strophanthus and that of digitalis has not, in my opinion, been sufficiently emphasized upon former occasions. We have been asked to place our faith in strophanthus on the strength of a series of cases in which the employment of that drug was followed by the disappearance of dropsy, and in which the pulse-tracings showed an apparent improvement in the pulse-rate and in the blood-pressure. But, Sir, the like has happened before without either strophanthus or digitalis; nay, it happens daily even now. The symptoms that arise from heart-failure may be relieved in many ways, and recovery from them is no certain indication of the therapeutic value of any drug which may perchance have been coincidently employed.

The myocardium is a hollow muscle which by its expansion and contraction assists and directs the circulation of the blood; in this action it is aided by valves so placed that, when closed, the whole force of the muscle is expended in propelling the blood onwards. Failure of any of these valves permits the blood to flow backwards as well as forwards, and so places the myocardium at a mechanical disadvantage in regard to the discharge of its function. But the heart works so well within its power that even when such an accident happens suddenly, there is not a falter in the action of the heart, nor any indication in the pulse-tracing of any interruption of the equability of the blood-pressure. This interference with the function of the myocardium ultimately leads to embarrassment of the circulation, but under favourable circumstances this does not happen for many a long day, so that even to old age such a valvular lesion may remain perfectly mute.

But whenever from overwork, privation, or debilitating illness, the general metabolism is interfered with, the heart suffers; its function is impaired. Like every weak muscle, the enfeebled myocardium reacts to stimuli irritably and irregularly, and does its own peculiar work imperfectly. The ventricles contract less effectually, the arteries are not so well filled, the blood-pressure falls, and venous remora is established, with all the evils that accompany this condition; soakage of all the tissues, with serous accumulation (dropsy) in one or more of the cavities of the body. If we put such a patient to bed, the mere adoption of the recumbent posture at once lowers the pulse-rate by an average of 12 (6–16) beats per minute, and in weakly, ill-fed patients the reduction is sometimes greater. This lowering of the pulse-rate amounts cumulatively to an increase of rest to the heart of over two hours in the twenty-four, and we can readily understand that this rest, coupled with warmth and better feeding, is sufficient to give such a fillip to the general metabolism as enables the heart to recover its tone and to discharge its function more perfectly. The blood-pressure rises, the balance of the circulation as between arteries and veins is restored, dropsy disappears, and the patient is re-established in comparative health.

The record of both the past and present history of medicine shows that many, if not most, of our hospital patients require no other treatment, though recovery may be aided by the judicious use of purgatives, of diuretics, or of such drugs as either diminish the work of the heart or restore the tone of the myocardium. It is evident, however, that those drugs alone are of paramount value which increase the elasticity of the myocardium, and that this action can only be permanent when accompanied by a corresponding improvement in the general metabolism. Thus only can we arrest the organism in its downward career, and place it in such a state of metabolic equilibrium as will ensure the permanence of that improvement which is so often found temporarily to follow the employment of even imperfect and inefficient methods of treatment.

This important action is usually ascribed to all the members of the digitalis group; but though they all possess a certain similarity of action, they vary very much in activity, and they also vary considerably in regard to the structures upon which that activity is exerted, and these two factors have a most important influence upon their usefulness.

The action of *Digitalis purpurea*, from which the group derives its name, is in moderate doses to improve the elasticity of all muscular fibre, and as all the blood passes many times through the heart for once that it passes through any other muscle, the myocardium is powerfully affected, while the other muscles remain practically uninfluenced. In like manner the muscles of the arterioles are also early and powerfully affected, though not to the same extent as the heart, as only the blood going to the district supplied by these vessels passes through them.[1] The increased elasticity imparted to the myocardium by digitalis enables it to expand and to contract more perfectly, and as, owing to the increased elasticity of the muscles of the arterioles, the arteries empty themselves more slowly, the blood accumulates within them, the blood-pressure gradually rises, and in accordance with Marey's law[2] the heart's action is slowed. No doubt this is partly due to the action of digitalis on the vagus nerve, but the action on the muscles is sufficient to account for all the phenomena observed, and it is with it we are chiefly concerned. The result of this rise in the blood-pressure is that the secretions are improved, and all the tissues of the body, amongst them the myocardium, are fed with richer blood at a higher pressure, so that metabolism is more perfect and every function more efficiently performed. As the blood accumulates within the arteries the veins are correspondingly emptied; the serous soakage of the tissues is reabsorbed, and the excess of water that thus gets into the blood is removed by the kidneys, so that for a time the urine is increased.

The improved metabolism of the myocardium enables it to discharge its function more perfectly, and to resist successfully all those deteriorating influences to which a weak heart succumbs, any hindrance to the circulation is fully compensated, and despite the existence of a valvular lesion the individual may descend into the vale of years wholly unconscious of the possession of a heart.

All the benefits we obtain from the use of digitalis are inseparably connected with its tonic action; they flow from the power that digitalis has of increasing muscular elasticity, and the improved metabolism of all the tissues, but specially of the myocardium, that follows this. Digitalis is no opium to the heart; it does not relieve by narcotising, but it soothes cardiac irritability by strengthening the cardiac muscle, and it assuages cardiac pain by improving cardiac metabolism, failure of which has been the cause of the pain. These benefits are readily obtained by very moderate doses of the drug, and though great benefit may at times be more rapidly attained by the judicious administration of larger doses, yet the long continuance of even small doses is often followed by the very best results; while the abuse of the drug, so frequently accompanied by distressing, if not alarming symptoms, proceeds upon an entire misconception of the true action of digitalis.

There is only one other member of the digitalis group that has succeeded in obtaining special recognition from cardiac therapeutists, and this is the *Strophanthus Hispidus*, but the action of this drug is so entirely different from that of digitalis that it is difficult to see how there can be any comparison between the two. In Africa, its native habitat, strophanthus is employed as an arrow poison, and the natives have so great a dread of it that when told that the seeds were employed as a medicine in this country, "they expressed the opinion that the English must be mad to employ so poisonous a substance for medicinal purposes."[1] The action of strophanthus on the heart is twofold: in small doses it arrests the heart in diastole, and in large doses it arrests it in systole.[2] The diastolic type of action seems to be that which alone is useful therapeutically; in it the diastole is prolonged and the contractile energy of the myocardium at the same time increased. The type is thus that of bradycardia, a slow-beating heart sending forward a large blood-wave with each contraction,—not a type of heart usually associated with much vigour of the circulation. This type of heart action is produced only by small doses; and the excessive energy of the drug, the many preparations of strophanthus in the market, of varying composition and strength, must introduce an element of uncertainty in its employment that cannot be devoid of anxiety. Strophanthus acts three thousand times more powerfully on the heart than digitalis;[3] so that if some still dread digitalis as a dangerous cardiac poison, what must be their feelings towards strophanthus. And if it be difficult to select an appropriate dose of a drug of but moderate energy and only one action, how great must be the difficulty in the case of a drug of such excessive potency and possessing a twofold action on the heart. Indeed, whether we regard the uncertainty of its direction or its excessive energy as a poison, it seems difficult to formulate a more forcible indictment against any drug than that presented by a bare statement of the facts recorded against strophanthus by its most able investigator and most ardent advocate.

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[1] Stockman, *New Official Remedies*, p. 58. London, 1891.

[2] *Physiologie Médicale de la Circulation du Sang*, p, 206. Par le Dr E. J. Marey. Paris, 1863. Le cœur bat d'autant plus fréquemment qu'il éprouve moins de peine à se vider.

But this is not all. Digitalis, as we have seen, acts equally upon all muscular fibre, and only more powerfully upon the heart and muscles of the arterioles because these organs receive from the blood within a given time a larger dose of the drug than the other muscles. The conditions as regards the circulation are permanently similar; and if strophanthus acted on all muscular fibre after the manner of digitalis, there would be a similar ratio between the action of the two drugs on the heart and on the arterioles, but this is not the case. Strophanthus acts three thousand times more powerfully on the heart than digitalis, but it acts one hundred times less powerfully than digitalis upon the muscles of the arterioles.[4] There is thus no similarity whatever between the action of the two drugs. From the entire absence of any appreciable action by strophanthus on the arterioles, the blood flows freely from the arteries into the veins, and any little rise of blood-pressure there may be is entirely due to the systole of the heart. The typical (therapeutically induced) strophanthus heart has a prolonged diastole, so that the arteries have a longer time than usual to empty themselves, and as the ventricle has been filling during this period, its systole sends an unusually large blood-wave into unusually empty arteries—precisely what happens in a case of bradycardia. The momentary rise of the blood-pressure passes rapidly with the blood-wave down the unfilled arteries; it does not, therefore, persist so long as the ventricular systole, and is consequently of shorter duration than even the third of a cardiac cycle. So evanescent a rise in blood-pressure can, however, have no appreciable effect either on general metabolism or upon that of the myocardium. Herein the action of strophanthus differs most essentially from that of digitalis; and from the absence of any improvement in the metabolism of the myocardium, the stimulating action of strophanthus must tend still further to exhaust it instead of strengthening it.

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[1] Fraser on "Strophanthus Hispidus," *Transactions of the Royal Society of Edinburgh*, vol. xxxv., part 4, p. 974.

[2] *Ibid.*, vol. xxxvi., part 2, p. 401.

[3] *Ibid.*, p. 403.

[4] *Ibid.*, pp. 438, 453.

Remembering this, the remarkable twofold action of strophanthus on the heart is easily understood. In large doses it exerts its own poisonous energy unchecked and forces the heart into fatal systole. In minimum lethal or so-called therapeutic doses strophanthus exerts a less powerful stimulation on the myocardium, with a type of action in which slowing of the rate is produced by prolongation of the diastole, and by occasional pauses in extreme diastole, both auricular and ventricular expansions and contractions being at the same time increased.

This tendency to arrest in diastole is not due to any action on the cardio-inhibitory apparatus, because paralysis of the intracardiac terminations of the vagus by atropine does not prevent its occurrence. It cannot be due to the action of the drug on the myocardium, as that would imply that in small doses strophanthus is capable of exerting an action on muscle diametrically opposite to that which it undoubtedly exerts in large doses. Accordingly Fraser has suggested that this diastolic type of action is due to a weakening of the excito-motor (katabolic) nerve structures. But so far as I am aware there is no evidence extant to show that even section of the sympathetic, excito-motor, or katabolic nerve does slow the heart's action, or in any way promotes slowing of the heart or its arrest in diastole. Before accepting "weakening of the excito-motor nerve structures" as explanatory of this peculiar type of action, it must therefore first be shown that this "weakening" does occur, and, second, that it is capable of acting as Fraser has suggested. There is, however, another explanation of this diastolic type of action which is in complete accordance with the facts, though it is not an explanation that can be regarded as very comforting to those who regard strophanthus as an important therapeutic agent. Strophanthus undoubtedly exercises a powerful stimulating action on the myocardium, an action which is three thousand times more powerful than that of digitalis, which forces the heart into energetic movements of expansion and contraction, but which is not associated with any important rise of blood-pressure, and is unaccompanied by any improvement in the metabolism of the myocardium. A large dose of the drug speedily forces the heart into fatal systole, but a minimum lethal or so-called therapeutic dose causes a slow action of the heart with prolongation of the diastole. During this prolonged diastole two or three auricular contractions overdistend the ventricle, which then empties itself with all the force it can still command. The contractility of the heart is not destroyed, but it is exhausted, and requires a more than usually powerful stimulant to rouse it to action. Rhythmic contractions occur spontaneously at long intervals under the influence of overdistention, even during prolonged standstill in diastole the ventricle can still be made to contract perfectly by mechanical irritation, and contractility only finally disappears when, after a long period of suspended action, the overdistended ventricle slowly and finally empties itself, shrinking to normal or smaller than normal dimensions.[1] Such a heart affords a typical example of a heart dying from exhaustion, the cause of which is not far to seek. Forced into increased energy in its movements, without any corresponding improvement in its metabolism, the heart has been compelled to draw upon its reserve, and when this fails death from exhaustion speedily follows. When death occurs in fatal systole after the administration of strophanthus, the cardiac muscle is found to be acid and to be so profoundly modified that it passes at once into a state indistinguishable from that of *rigor mortis*,—it is fatally poisoned. On the other hand, when a minimum lethal dose is administered the contractility of the heart is not abolished, and the myocardium still remains neutral or alkaline to the last.[2]

It has been claimed that strophanthus is not cumulative. As we have just seen, it may be injurious or even fatal without warning, and from this point of view there may be worse things than the warning we get of approaching saturation from those symptoms we are accustomed to ascribe to accumulation.

It has also been claimed that the absence of any action on the arterioles is to be reckoned to the advantage of strophanthus in those numerous cases in which vascular stimulants require to be conjoined with digitalis to prevent any untoward rise of blood-pressure. But apart from those evils already referred to, which are caused by this absence of action on the arterioles, we know that though improvement in the cardiac metabolism is the one thing needful in all cases of heart-failure, it is of paramount importance in the class of cases just alluded to, because in them the heart-failure is due to the inability of the heart to cope unaided with the obstacles opposed to the exercise of its function. The employment in such a case of a drug like strophanthus, whose action is to stimulate and exhaust the reserve energy of the heart, must tend still further to enfeeble that organ, and persistence in its use must be most damaging to the integrity of the organism. On the other hand, the judicious combination of vascular stimulants with so powerful a cardiac stimulant as digitalis enables us so to regulate the blood-pressure as to keep it equable and efficient throughout the whole cardiac cycle, to the manifest advantage of the cardiac metabolism, and this, too, without any risk of the blood-pressure ever becoming so high as to be injurious.

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[1] Fraser, *op. cit.*, vol. xxxvi., part 2, p. 419

[2] *Ibid.*

The action of strophanthus is thus, like that of all its congeners of the Apocynaceæ, that of a cardiac poison, and not a cardiac tonic. In large doses—though from the energy of the drug such doses may be really small—it forces the heart into a fatal systole. In smaller doses it stimulates the heart to increased action, and by calling on its reserve of energy without improving its metabolism it causes death in diastole from exhaustion, and the more feeble the heart is the greater the risk attending this peculiar action. Strophanthus may occasionally be of use in cases of ruptured compensation, but any assistance which it gives is at the expense of the cardiac reserve, and the patient is only saved from serious disaster by the benefit he has derived from rest, warmth, and nutritious food,—that is, by the improvement in his environment generally.

Strophanthus is thus at all times an uncertain and dangerous drug to employ, and one entirely unworthy of being called a remedy.

It is quite otherwise with digitalis. This drug does not act by calling on the reserve of cardiac energy; but by improving the metabolism of the organism generally, and especially of the myocardium, it adds to this reserve, and aids any improvement in the environment, not only to tide over a temporary disability, but also to restore the myocardium to such a condition of comparative health as will enable it to withstand all the deteriorating influences to which it may be exposed.

It is difficult to conceive a greater contrast than that which subsists between the action of these two drugs, and the more carefully the actions of both are considered, the more markedly these differences will be found to be accentuated.

II.—ON SEPARATE ACROMION PROCESS SIMULATING FRACTURE.

By John Struthers, M.D., LL.D, P.R.C.S. Ed.

(*Continued from page* 908.)

IV. Consideration of the Causes of the Condition of Separate Acromion Process.

Fracture. Relation to Chronic Rheumatoid Arthritis. Relation to the Epiphysis.

It is not easy to find one's way to definite conclusions on these relations amid the numerous and conflicting opinions to be found in the literature of the subject.[1]

(A.) Fractures of the Acromion.

Question of frequency. Distinction between true fracture and conditions simulating fracture.

The impression that fracture of the acromion process is not a very common occurrence appears to be conveyed by *Sir Astley Cooper's* opening words on this fracture in his celebrated *Treatise on Dislocations and Fractures of the Joints*—"This point of bone is sometimes broken." But from the remarks that follow, in regard to the detection of the fracture, it is evident that this great surgeon and anatomist was familiar with the occurrence. He speaks of diminished roundness of the shoulder, of feeling the depression on tracing from the spine to the clavicle, and of crepitus being felt when the surgeon places his hand upon the acromion and rotates the arm. In the accompanying dorsal diagrammatic figure (p.

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[1] General statements in the Text-books of Surgery need not be referred to when not bearing evidence of being founded on personal observation. The following are the writings of authors more particularly referred to:—The late *Prof. Robert Adams*, of Dublin—(*a*) "Shoulder Joint, Abnormal Conditions of," in *The Cyclopædia of Anatomy and Physiology*, vol. iv., article written in 1849; and (*b*) *Treatise on Rheumatic Gout*, 2nd ed., 1873, with accompanying vol. of Plates. The late *Prof. Robert W. Smith*, of Dublin, "Observations upon Chronic Rheumatic Arthritis of the Shoulder," in the *Dublin Quarterly Journal of Medical Science*, February and May 1853. *Mr John Gregory Smith*, "Pathological Appearances in Seven Cases of Injury of the Shoulder Joint, with Remarks," in *The London Medical Gazette*, vol. xiv., 1834. *Mr W. Arbuthnot Lane*—(*a*) "Some Points in the Physiology and Pathology of the Changes produced by Pressure in the Bony Skeleton of the Trunk and Shoulder Girdle," in *Guy's Hospital Reports*, vol. xliii., 1886; (*b*) "The Causation and Pathology of the so-called disease Rheumatoid Arthritis, and of Senile Changes," in *Transactions of the Pathological Society of London*, vol. xxxvii., 1886; and (*c*) "Mode of Fixation of the Scapula, etc.," in the *British Medical Journal*, 19th May 1888. *Prof. F. H. Hamilton*, of New York, *Practical Treatise on Fractures and Dislocations*, 8th ed., revised and edited by Prof. Stephen Smith, of New York, 1891.

411, new ed., 1842) the line of fracture has the family likeness to the specimens I have described of separate acromion. Of the second figure given (p. 412), he says:—

> "This figure shows a fractured acromion; the edges of the fractured surfaces are united by ligament, part of which has been turned aside to show ligamentous granulations upon the fractured surface." No history is given for the preparation. The figure is a front view, and it also has the family likeness to my specimens. He adds—"Fracture of the acromion may unite by bone; but it generally unites by ligament, in consequence of the difficulty which exists in producing adaptation and in preserving the limb perfectly at rest during the period required for union." He does not allude to fracture without displacement, and consequently assumes difficulty in producing adaptation.

It is not evident but that his remark just quoted, as to non-union being general, may be founded on dissecting-room specimens of separate acromion. He makes no reference to the epiphysis.

Sir William Fergusson, writing some years later (*Practical Surgery,* p. 185, 1842), says:—

> "The acromion process may be broken, but the accident is of rare occurrence. I have dissected a number of examples of apparent fracture of the end of this process; but in such instances it is doubtful if the movable portion had ever been fixed to the rest of the bone." In the figure he gives to show "the ordinary position of some of the fractures here referred to," the line on the acromion gives more to the broken off part than in my specimens, but the figure is diagrammatic.

Thus Fergusson, thorough surgical anatomist as well as experienced surgeon, was in doubt whether such specimens should be regarded as cases of fracture or as cases of non-union of the epiphysis.

Prof. Adams, under the head of "Fracture of the acromion process" (*loc. cit., a,* p. 600), remarks:—

> "The fracture of the acromion will be generally found to have taken place at a point behind, and within, the junction of the clavicle with this bony process; its direction we always observe to be in the original line of the junction of the epiphysis with the rest of the bone."

No cases are given, and the above remark is too general. He is probably influenced by his favourite view, alluded to below, of separation taking place at the line of junction of the epiphysis in cases of chronic rheumatic arthritis; and in his subsequent references to the opinions of Sir A. Cooper and Malgaigne the reader is left in doubt whether the remarks of these authors are founded on museum specimens, such as those described in this paper, or on cases ascertained to have been traumatic fractures.

The view expressed by *Prof. F. H. Hamilton* (*loc. cit.*, p. 199), a recognised authority on fractures and dislocations, may be taken as his judgment on the evidence submitted by previous writers as well as embodying his own experience, and they have largely influenced modern writing and teaching on this question.

"There is some reason to believe, I think, that a true fracture of the acromion process is much more rare than surgeons have supposed, and that in a considerable number of the cases reported there was merely a separation of the epiphysis; the bony union having never been completed. If such fractures or separations occurred only in children, very little doubt might remain as to the general character of the accident; but the specimens which I have found in the museums, and the cases reported in the books, have been mostly from adults. It is more difficult, therefore, to suppose these to be examples of separation of epiphyses, but I am inclined to think that in a majority of instances such has been the fact. It is very probable, also, that in the case of many of the specimens found in the museums, called fractures, the histories of which are unknown, they were united originally by cartilage, and that in the process of boiling, or of maceration, the disjunction has been completed. The narrow crest of elevated bone which frequently surrounds the process at the point of separation, and which Malgaigne may have mistaken for callus, is found upon very many examples of undoubted epiphyseal separations which I have examined; and this circumstance, no doubt, has tended to strengthen the suspicion that these were cases of fracture."

"There is no doubt, however, that a fracture of this process does occasionally take place. Examples of fracture of the acromion process have been reported by Duverney, Bichat, Avrard, A. Cooper, Desault, Sanson, Nélaton, Malgaigne, West, Brainard, Stephen Smith, and others. *I have myself seen five cases.* In the case seen by Cooper it *entered the articulation of the clavicle*, and produced at the same moment a dislocation. Malgaigne says it occurs *generally* further up, and *posterior to the attachments of the clavicle*, 'near the junction of the diaphysis with the epiphysis,' and that the fracture is in most cases transverse and vertical; but Nélaton saw a case in which the fracture was oblique. In the case reported by C. West, of Hagarstown, Md., the fracture was *through the base of the process.* In *two* of the examples seen by me the fracture was *in front of the clavicle;* in the *third*, occasioned by the fall of a barrel of flour upon the shoulder, the fracture occurred *at the acromio-clavicular articulation*, and was accompanied with an upward dislocation of the outer end of the clavicle; in *the fourth*, the fracture occurred *at the same point*, but there was *neither displacement of the clavicle nor of the process*, the fracture being only recognised by crepitus and motion. The *fifth* was brought to my notice by Dr Sabine, surgeon to Bellevue Hospital. The patient had been struck by a policeman's club. There was distinct crepitus, the fracture being *posterior to the acromio-clavicular junction*, but there was *no displacement* of the fragments or of the clavicle. Some of the fractures were confirmed by dissection, and in the case mentioned by Dr Stephen Smith, an autopsy, made three weeks after the accident, showed a fracture *in front of the clavicle without displacement*, the periosteum covering its upper surface not being torn; the fragment could be turned back as upon a hinge. [This fracture was caused by a blast; a fragment of rock being driven upward struck the acromion on the under surface.]"

I have placed some of the words in the above quotation in italics in order to call attention to the localities of the fracture. In the five cases of undoubted traumatic fracture that came under Hamilton's personal observation, two of them (and Dr Stephen Smith's case) were in front of the clavicular connexion; two of them at the acromio-clavicular articulation (meaning, we may infer, opposite some part of the articulation); in the fifth case the fracture was behind the clavicular connexion. There was no displacement in one of the cases (the fourth) in which the fracture occurred opposite the clavicular connexion, nor in the one (the fifth) behind that connexion, nor in Dr Stephen Smith's case where it occurred in front of the clavicle. From this undoubted, though limited, statistic we see that traumatic fracture may occur at any part of the acromion, depending, no doubt, on the kind and locality of the force; further, that there may be no displacement, but that, notwithstanding, the existence of the fracture may be detected by careful examination.

These references sufficiently show that in the opinion of Hamilton traumatic fracture is a comparatively rare occurrence, so that, although alive to the question and expert in the mode of its detection, he could, in his wide experience, refer to only five cases of the occurrence.

In strong contrast with the usually accepted opinion of Hamilton, is that of *Mr Arbuthnot Lane,* of Guy's Hospital, who holds that fracture of the acromion process is the most common of all fractures. In 325 bodies whose bones he carefully examined in the dissecting-room (*loc. cit.*, *c*, 1888, p. 1048), while he found no instance of undoubted fracture of the coracoid process, he "found that a considerable proportion presented fractures of the acromion, that portion of the scapula being broken more frequently than any other bone in the body." He refers to the statistics of fractures of the upper extremity treated at the Middlesex Hospital in ten years ending 1879, a total of 1084 fractures, of which 6 were of the coracoid process and only 10 of the acromion. This contrast to his own finding in the dissecting-room he attributes to "the comparative difficulty in detecting a fracture of the acromion. I have in many instances of so-called simple contusion of the shoulder of the living subject been able to satisfy myself of the presence of an ununited fracture of the acromion or of fracture of the outer third of the clavicle."

In a previous paper (*loc. cit.*, *a*, 1886) Mr Lane includes a full consideration of the question of the frequency of fractures of the acromion. The paper is an elaborate and thoughtful one, embracing the consideration of the trunk and shoulder girdle, and contains much original matter with pretty strong criticism of the views of other writers. Mr Lane's paper is a valuable contribution to the discussion of the interpretation of the condition of separate acromion process, but requires to be read critically. He assumes too readily that all such specimens, whether with or without the accompaniment of rheumatoid arthritis, were originally cases of fracture, and he appears not to be aware of the frequency of the occurrence of the separation at the locality of the union of the epiphysis.

Experimenting on the dead body, Mr Lane finds (p. 408):—

> "If the outer end of the shoulder as represented by the acromion be struck vertically, obliquely, or at right angles to the vertical by a light hammer the acromion is fractured with the greatest facility. This fracture usually corresponds in position with the seat of fracture as found pathologically, and its direction will be found to vary within the same limits. In this artificial

> fracture the line of fracture may pass in front of or behind the oval clavicular facet or through any portion of its area. Using the same light hammer, but with greater force, the clavicle may be broken. It is broken much more easily in that portion of its extent which lies outside the conoid tubercle."

Referring to his observation of the bones in numerous subjects in the dissecting-room, Mr Lane says (p. 415):—

> "I found a great many instances of fractures of the acromion, but did not consider this unnatural, judging from the facility with which I was able to break the acromion with a blow applied horizontally as in a fall on the shoulder, or vertically as when the shoulder is struck by a falling body. In many of those in which the fracture was in front of the clavicular facet I found considerable displacement of the fragments. The direction and seat of the fracture varied within a broad limit, corresponding to the direction of the fractures I obtained experimentally on the dead body. In some cases the fragments were connected by intervening fibrous tissue, while in other cases they were united by a fibrous capsule lined by a synovial membrane. The latter arthrodial joint allowed of much more freedom of movement than the amphiarthrodial joint, and the extent of development present in the newly-formed articulation was evidently dependent on the amount of movement to which it had been subjected by the occupation of the individual and to a less degree upon the direction and seat of the fracture."
>
> "In almost all these cases *the shoulder joints presented the changes which are usually described as rheumatoid arthritis*, but which I think are better described as *pressure changes*. These, I am convinced, must have been consequent on the injury that caused the fracture of the acromion, so that the fracture and the joint changes were both expressions of the blow received, which was the cause of both."

It will have been observed by the critical reader that in these quotations there is a good deal of theory and general statement, and ready assumption that all of the separate acromions found in the dissecting-room had been cases of fracture. It need not be doubted that the acromion may be readily broken in the dead body, or that it may, and probably is, often broken in the living body, at any place; but the question is, Why the separation is so often found just behind the clavicular connexion, at the place of union of the epiphysis, and how that is to be explained; and as bearing on the supposed connexion with rheumatoid arthritis it is necessary to be informed in each case to what extent the head of the humerus had eburnated or excavated the acromion.

Mr Lane notes (p. 416) five museum specimens, all of which he assumes to have been traumatic fractures, and which he regards as "fair instances of ununited fracture of the acromion."

In Nos. 1, 3, and 4 there are "extensive so-called rheumatoid changes in the shoulder joint," but to what extent the under surface of the acromion was eburnated or excavated is not stated. The lines of separation are various in position and direction. They proceed outwards:—In No. 2, "from a point behind the clavicular facet. The surfaces of the fragments are smooth and eburnated, and are connected by a capsule lined by synovial membrane. The glenoid cavity presents but slight change." In No. 4, "from a point just behind the clavicular facet. The union is by dense ligamentous tissues. There is no displacement of fragments." In No. 5, "outwards and backwards from a point just in front of the clavicular facet. The fragment is displaced somewhat downwards and forwards. The surfaces are united by dense ligamentous tissue." In No. 1, "outwards from just behind the anterior margin of the clavicular facet. The outer fragment is connected to the acromion by ligamentous tissue; there is no synovial cavity. It is displaced forwards in a horizontal plane." In No. 3, "outwards from the centre of the clavicular facet. There is no displacement, and the fragments are united by dense ligamentous tissue."

It will be observed that in the two cases first quoted (Nos. 2 and 4) the *line of separation* was just behind the clavicular facet, the position at or close to which it occurred in all of the thirteen cases I have described, being the locality of the union of the epiphysis. The other three cases, from the localities of the separation, could only be cases of true fracture.

In explanation of the *displacement* noted in Nos. 1 and 5, Mr Lane remarks (p. 421):—

"The forward displacement of the fragment when the fracture occurs outside or through the anterior portion of the clavicular facet is due to the gradual contraction of the coraco-clavicular ligament which draws it downwards and forwards."

That may be, but the unresisted dragging down of that portion of the deltoid muscle would seem a better explanation. That there may be no displacement when the fracture is in front of the clavicle is seen in Dr Stephen Smith's case, above referred to. The periosteum was not torn, as probably enough it is not in most cases of fractured acromion; accounting for their being so often overlooked. There is no displacement in any of the thirteen specimens I have described; open to the alternative interpretation of epiphyseal separation or of fracture. On the latter supposition, if the action of the deltoid muscle and the contraction of the coraco-acromial ligament should cause displacement of a fractured anterior part of the acromion, would we not much more expect displacement in fracture at the post-clavicular line? The whole acromio-clavicular connexion is then detached from its basi-acromial support, the scapula now hung to the clavicle only by the coraco-clavicular ligaments, as in fractures near the outer end of the clavicle, in which considerable displacement is often enough seen.

Mr Lane notes two specimens of *united* fracture of the acromion (p. 417), both presenting evidence of severe injury to the shoulder.

In the first, there is also "an unreduced sub-coracoid dislocation of the head of the humerus;" in the second, the head of the humerus "is much deformed and shortened." In the first, "Its direction is outwards from *the centre of the clavicular facet*. The fracture has united firmly by bone. There is considerable horizontal displacement of the outer fragment, the angular intervals between it and the inner fragment being filled in by osseous material." In the second, "The direction of the fracture is outwards from a point *a quarter of an inch behind the clavicular facet*. The outer fragment slopes downwards and outwards. There is more callus uniting the fragments on the lower than on the upper surface of the fracture."

These appear to have been cases of true fracture, and followed by bony union. There was some displacement in both. In explanation of the occurrence of bony union in these two cases, Mr Lane says—"The complete rest of the parts necessitated by the more severe injury to the shoulder-joint in both these cases has permitted of the fragments of the acromion being kept sufficiently at rest to allow of their uniting by bone."[1]

In regard to the supposed rarity of the occurrence of fracture of the acromion, Mr Lane refers to the fact, above noted, that in the statistics of fracture treated at the Middlesex Hospital for ten years ending 1879, there were recognised only ten cases of fracture of the acromion; of which one occurred during the first five years of life, one between 15 and 30, four between 30 and 45, and the remaining four in patients above 45 years of age. And he remarks (p. 420):—

> "These facts, taken in conjunction with the frequency with which this fracture is observed in the dissecting-room, and the facility with which it is artificially produced in the dead subject, serve to show *that in the living subject fractures of the acromion process are hardly ever diagnosed.*"

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[1] To these I may add a case resembling the first of these two which, since writing the above, I have come upon in examining a preparation of old-standing unreduced sub-coracoid dislocation of the shoulder in the Charles Bell collection in the Museum of the Edinburgh College of Surgeons. The case has the further interest in that both shoulders had been dislocated. In the *left* shoulder (Cat. of 1893, p. 192, No. 5, 3), a spirit preparation that must have been put up more than sixty years ago, I find there has been fracture of the acromion with bony union; in the *right* shoulder, a dried preparation (No. 5, 4), the acromion is entire. As there is no history during life, it may be inferred that they were met with in the dissecting-room.

In the original MS. Bell Catalogue, the *left side* is described thus:—"Both arms of this man had been dislocated; on this side, the left side, the scapula has also been fractured through its body. The posterior portion has been dragged forwards by the action of the serratus magnus muscle, and the two portions have united irregularly; the newly formed joint of the shoulder is exposed." The *right side* is thus described:—"The right scapula and humerus from the same body as the preceding preparation, articulated as they were found in the body. There was dislocation inwards with fracture of the inner edge of the glenoid cavity. Imperfect anchylosis has taken place between the posterior part of the body of the humerus and that portion of the glenoid cavity which was fractured and was again united. The surfaces of the head of the humerus and of the glenoid cavity are both rough and unnatural, having for a long period before the patient's death been deprived of their office as a joint."

Both specimens show abundant evidence of rheumatoid action following the dislocations. They are true sub-coracoid dislocations, each with definite new glenoid cavity. The *right acromion*, a good-sized quadrate acromion, stands out prominently and is uninjured and healthy. The *left acromion* has been fractured just behind the clavicular connexion, the line directed outwards and a little forwards. There is no displacement. That there had been fracture I infer from the presence of a furrow on the upper surface and outer edge, about $\frac{1}{8}$ inch in breadth and $\frac{1}{12}$ to $\frac{1}{10}$ inch in depth; and on the under surface from the presence of a callus-like ridge externally and internally with a furrow at the middle between them. These ridges led me to look for further evidence of fracture. The furrow above was seen only after removing the periosteum. The under surface of the acromion also was covered with periosteum. There is firm bony union.

In support of his opinion that specimens of separate acromion have been cases of fracture, as opposed to the non-union of the epiphysis view, Mr Lane gives the following six reasons (p. 418):—

> Against the possibility, as he expresses it, "that the bony centre in the extremity of the epiphysis has formed with the remainder of the bone an arthrodial or amphiarthrodial joint, as in the manubrio-sternal articulation and in the joint which usually exists between the body and cornua of the hyoid bone, I would put forward the following arguments:
>
> 1. The frequency with which it occurs associated with other fractures of the shoulder-girdle and its connexions, where it is extremely probable, if not absolutely certain, that it owed its presence to the same cause. In some of these cases an amphiarthrodial joint, with or without displacement, is present, while in others an arthrodial joint, with or without forward, or forward and downward, displacement exists.
> 2. The frequency of its association with so-called rheumatoid arthritis of the shoulder-joint, which I consider to be as much an expression of injury as fracture.
> 3. Its much greater frequency on the right side.
> 4. The broad limit in the space in which this condition is found. It may occur outside the clavicular facet or a considerable way inside.
> 5. The variation in the direction of the fracture with respect to the axis of the acromion.
> 6. The fact that the seats of this condition and those of fracture artificially produced differ in no single particular.

In view of the facts and arguments submitted by Mr Lane, it is not possible to resist the conclusion that fracture of the acromion process is a much more frequent occurrence than had been supposed, or than is usually stated in text-books on surgery, and that the erroneous impression is owing to the difficulty in detecting the fracture, or, rather, to the readiness with which it may be overlooked. He is, however, not on so sure ground in holding that the "hypothesis of separation of the epiphysis" is "utterly without foundation." He fails to account for the fact that, while fractures of the acromion may occur at any part, the usual place of separation is at or close to the post-clavicular line, the place of union of the epiphysis. That may be from his not having seen so many cases of its occurrence at that locality as I and others have seen. That is the locality in all of the thirteen cases I have described, and I have not seen a specimen of its occurrence at any other part of the acromion. While not doubting that true fractures of the acromion occur at and in front of the clavicular connexion and that they may remain in the ununited condition, the fact that the usual locality of separate acromion is at the post-clavicular region remains for some anatomical explanation.

One of Mr Lane's list of reasons above quoted, the third, that has not been met in the preceding considerations, remains to be noticed:—"Its much greater frequency on the right side." That was so among the six cases noted by him; all of the five specimens given as of ununited fracture of the acromion were of the right side, while only the case of united fracture, accompanied by dislocation of the shoulder, was of the left side. The argument seems to have weight, taken along with the consideration that accidents to the upper limb, including dislocations of the shoulder, are more common on the right than on the left side. But turning to the facts given in my Table II., page 900, it is seen that of my 13 specimens, 8 were of the left side, 3 of the right side, 1 of both sides, and 1 (Nos. 5 and 6) certainly on the right side, doubtfully on the left. To these falls to be added the Charles Bell case (given in the footnote above) in which, with dislocation of the shoulder on both sides, the acromion had been fractured on the left side but not on the right. These numbers reverse Mr Lane's conclusion, and show the danger of founding a general conclusion on a limited statistic.

(B.) QUESTION OF THE CAUSE OF THE OCCURRENCE OF SEPARATE ACROMION PROCESS IN CASES OF RHEUMATOID DISEASE OF THE SHOULDER JOINT.

This co-existence was prominently brought into notice by the late Prof. Robert Adams of Dublin (*loc. cit.*), to whom, and to the late Prof. Robert W. Smith of Dublin (*loc. cit.*), surgery was indebted for original and valuable observations on the condition termed by Adams "chronic rheumatic arthritis," now usually called chronic rheumatoid arthritis.

The literature of the subject of chronic rheumatoid arthritis is extensive, and has involved the discussion of the occurrence of so-called "dislocation upwards" of the humerus, and the question is complicated by the frequent association of the rheumatoid condition with the appearances of old traumatic dislocation of the humerus forwards or downwards. Mr Adams labours to establish that the displacement upwards is not to be taken as primarily traumatic but as a secondary result of the rheumatoid disease, and that such secondary displacement may also take place inwards or downwards. Confusion has arisen from the term "new glenoid cavity" being vaguely or variously used. But it is easy to determine that a specimen is one of old traumatic dislocation by the presence of a defined new glenoid cavity placed to the inside of or below the old cavity, sub-coracoid or sub-glenoid, where the dislocated head of the humerus had worked for itself a new cavity before the rheumatoid changes were set up. The new glenoid cavity so often mentioned by Adams is the space acquired upwards, by the gradual destruction of the capsular tendons and other soft parts, at length formed by the coraco-acromial arch and the old glenoid cavity together.

It is hardly necessary to say that traumatic dislocation of the humerus upwards is an anatomical impossibility unless the acromion process has been fractured and displaced upwards. The upper end of the humerus, cushioned by the capsular muscles, fully occupies not merely the glenoid cavity but also what may be called the accessory socket of the shoulder joint, formed by the coraco-acromial arch. The sub-deltoid bursa alone intervenes between the cushioned ball and the acromion, serving as the synovial membrane of the accessory socket, the space intervening when the parts are exposed in dissection being enough to admit only the end of the handle of the scalpel when pushed into it. Rupture of the long tendon of the biceps muscle might possibly cause some hitch in abducting the arm, but that secondary function of the tendon is exercised only when the biceps muscle is acting, and the former supposition that that rupture is a not infrequent occurrence is now well known to have arisen from a misinterpretation of the condition in which the tendon is usually found in cases of advanced rheumatoid disease.

The supposition that the rheumatic tendency has had the effect of delaying the union of the acromial epiphysis would imply that the rheumatic tendency had shown itself in early life, by the age of about the 25th year, and it is not evident why that tendency should single out the acromial epiphysis among all the epiphyses of the skeleton. The relation, if not due to injury causing fracture, must be sought in some operation of the advancing rheumatoid disease of the shoulder joint, effecting a separation of an already united epiphysis.

In the advanced stages of that disease there is great alteration of the parts, especially upwards, as well described by Adams. The capsular tendons are more or less completely absorbed, the upper part of the capsular ligament is more or less destroyed, allowing the head of the bone to pass upwards to contact with and friction against the coraco-acromial arch ; the cartilage of the glenoid cavity and of the head of the humerus is more or less destroyed and replaced by eburnation, both socket and head are altered in shape and osteophytes and cartilaginous excrescences form ; a large general socket results, embracing the altered old glenoid cavity and the supra-glenoid sub-acromial space, this capacious cavity embraced by a capsular ligament, the upper part of which may be attached to the coraco-acromial arch, the lower part of it to beyond the anatomical neck of the altered humerus ; and the cavity is filled with fluid and with synovial fringes and cartilaginous excrescences projecting into it. The long tendon of the biceps muscle may be in process of absorption but is generally gone within the joint and has acquired a new attachment to the humerus at the bicipital groove, from which that head of the muscle continues to exercise its function.

These extensive changes are well depicted by Adams in his Plate ii. and in Plate iii., fig. 2 (*op. cit., b*). In regard to the upward passage of the humerus and its effect on the coraco-acromial arch he says (*loc. cit., a*, p. 587):—

"Under the influence of the most usual form of this disease, all these parts intervening between the head of the humerus and the coraco-acromial arch or vault are absorbed; and the superior extremity of the head of the humerus at length comes into immediate contact with the concavity of the arch . . . its head being constantly pressed against the under surface or concavity of the coraco-acromial arch, not only do the processes of the scapula which form this arch at length show manifestly the effects of friction, but the upper portion of the acromial end of the clavicle does so equally. All these portions of bone are rendered concave, and are usually covered by a porcelain-like deposit, corresponding to an analogous polished surface which covers the convexity of the head of the humerus.

"In many cases in which the shoulder joint has long been the seat of this chronic disease, the *acromion process* has been found traversed in the line of junction of its epiphysis by a complete interruption of its continuity, *as if fractured*: we say as if fractured, for we are convinced that this solution of continuity of the acromion process is not really a fracture produced by violence, but a lesion, which so frequently exists in combination with chronic rheumatic arthritis of the shoulder, that we are compelled to look upon it, in these cases, as a peculiar organic change, the result of chronic rheumatic disease. We do not pretend to account for the separation of the acromion process into two portions; nor can we say why it is that the division usually occurs in the original line of the epiphysis, particularly at the late period of life at which we generally witness this phenomenon. In some of these cases we have found the acromion in a state of hypertrophy; in others in a state of atrophy; but in no case did there seem to be any attempt at ossific deposition on the contiguous surface of the separated portions of the acromion, a circumstance which might be expected if a fracture had occurred."

As Adams says in *many* cases, it is worth while to inquire whether the association of separate acromion process with chronic rheumatoid disease is in reality a frequent occurrence. I have therefore made the following note of the number of such cases that have been recorded, so far as I am aware, noting at the same time whether there is evidence of the case having begun with an injury to the joint such as would account for fracture of the acromion process. An important point to note is, whether the acromion was separate in both shoulders. The condition of chronic rheumatoid disease, as Adams remarks, is frequently symmetrical, and the theory of fracture is not very likely to be applicable in cases of symmetrical separate acromion.

Enumeration and particulars of cases in which separate acromion process was found associated with the condition of chronic rheumatoid disease of the shoulder joint.

1. By *Adams* (*loc. cit.*, *a*, p. 590, fig. 429). Case of J. Byrne, male, æt. 55. Chronic rheumatoid disease of right shoulder for some years (no mention of left). When arm was raised humerus could be felt to strike against acromion. On post-mortem examination all the parts that lie normally between humerus and coraco-acromial arch had completely disappeared. Outer end of clavicle and the coracoid worn and excavated. *Acromion process* traversed from within outwards by a perfect solution of continuity, completely dividing it into two nearly equal portions, the two portions on same level, no ossific deposit at the separated edges. Same case figured in *loc. cit.*, *b*, Plate iii., fig. 2.

2. By *Adams* (*loc. cit. a*, p. 588). Sex and side not mentioned. Specimen of advanced rheumatoid disease in Museum R.C.S. Dublin. Acromial end of clavicle unsupported, *acromion process* "removed" to extent of an inch,

remainder of process thinner than natural and atrophied. This specimen shows that continued friction of the end of the humerus had led to absorption of the part of the acromion that is sometimes found separate.

3. In *Sandifort's Museum Anatomicum*, vol. iv., Table 25, fig. 2, referred to by Adams (*loc. cit.*, *a*, p. 599, fig. 431; also figured by Adams in *loc. cit.*, *b*, p. 163). Right side. Sandifort considered the condition of the parts to be the result of accident. Adams considers it a case simply of chronic rheumatic arthritis, and remarks—"The *acromion process* is divided into two portions; a phenomenon we have so frequently noticed to accompany this disease of the shoulder joint."

4. By *R. W. Smith* (*loc. cit.*, p. 12, figured in Pl. ii.). Side not mentioned and not evident from figure. "It was taken from the body of a woman of advanced age, who for many years suffered from the usual symptoms of this disease, and who, it was known, had never sustained any injury of the shoulder." As described, the changes on the soft parts and on the bones at the shoulder joint are the usual characters above noted of advanced chronic rheumatoid disease. "Upon removing the deltoid muscle the naked head of the humerus, elevated to the acromion process, came into view. . . . The *acromion*, about ¾ inch from its extremity, was divided into two portions which were held together solely by the fibrous structure which invests the upper surface of the process; but this tissue was so stretched that the detached portion was separated from the remainder of the acromion by an interval of ¾ inch. The under surface of the entire process was denuded of periosteum and covered with an ivory-like structure, which was also found investing the articular surfaces of the acromio-clavicular joint." The condition of the acromion in this case approaches that described in my Case No. 2, in which, however, there was no disease of the glenoid cavity.

5. By *R. W. Smith* (*loc. cit.*, p. 1, Pl. i., fig. 1). Male, æt. about 60. Case of *congenital* dislocation on dorsum of scapula in *both* shoulder joints, "in which chronic rheumatic disease had been established." Glenoid cavity situated on external aspect of neck, and no vestige of glenoid cavity in normal situation. Head of humerus "placed much further back than natural, and elevated so as to be in contact with the under surface of the acromion process." Disease much the same on both sides, but *acromion process* separate on right side only, on left side perfect. The separation of the right acromion is at about an inch from its anterior end; no deposition of bone along the line of separation; no displacement; the detached portion closely connected to the remainder of the process by fibrous tissue.

Here we have clearly a case of original malposition of the head of the humerus, serving for sixty years of life, in which there is at least no record of injury to account for the rheumatoid disease found in both shoulders. Although there was the "elevation to the acromion process," there apparently was not naked contact of the head of the humerus with the acromion, as the tendons of the capsular muscles were perfect except that of the subscapularis, which had partially disappeared; and the capsular ligament was present, somewhat thicker than natural. The tendon of the biceps was present. There were osseous growths around the large glenoid cavity, and great changes on the form of the head of the humerus, with eburnation. As the soft parts were present between the elevated humerus and the acromion, it would, on the whole, seem most reasonable to suppose that the separation of the right acromion had been due to some injury causing fracture.

6. By *R. W. Smith* (*loc. cit.*, p. 353). Owing to the loose way in which the cases are brought in, it is not at first evident that this was not the case No. 4 above noted, but on critical study it is seen to be a different case, and both sides are described. Female, age not given, "the patient laboured under the disease in both shoulder joints for several years before her death, but the affection had been established in the right articulation long before the left was attacked." Both sides show the changes in much advanced rheumatoid disease. The *acromion* separate on *both* sides, the detached portion at a con-

siderable distance from the basi-acromion. On the *left* side—"The head of the humerus (with the intervention of the capsule) was pressed closely against the under surface of the acromion, which process, about ¾ inch from its extremity, was divided into two portions separated fully ½ inch from each other, the fibrous structure which connected their upper surfaces having suffered a corresponding amount of elongation. The detached portion, along with the extremity of the clavicle, was also pushed upwards above the level of the remainder of the process."

On the *right* side, figured in Pl. iii., the changes were more advanced. "About ¾ inch of the extremity of the *acromion* had altogether disappeared, and a broad, thick, concave plate of bone passed downwards from the shortened process, and became perfectly continuous with the upper and outer part of the margin of the glenoid cavity, which thus appeared as if a coracoid process had sprung from its external side. The acromial extremity of the clavicle was enlarged, excavated upon its under surface, and polished by the attrition of the head of the humerus; it was distant from the acromion fully ¾ inch, but connected to it by an exceedingly dense fibrous tissue, which constituted the highest part of the capsule." The upper attachment of the capsule was transferred to the acromion, clavicle, and coracoid process, and was thin, "in many places as translucent as if it had been composed merely of synovial membrane.' The tendons of the capsular muscles were flattened and expanded and detached from the humerus. The view here conveyed seems to be that the separate piece of the acromion had been floated down and become attached to the upper and outer edge of the glenoid cavity; and the author connects with this a reference to a preparation in the Dublin R.C.S. Museum, somewhat similar in other respects, of which Adams says "the acromial end of the clavicle is unsupported, and the acromion process has been removed for the amount of an inch in extent."

In this case it is seen that the capsule still intervened, but was very thin on the left side, allowing of close contact and pressure against the acromion, the side on which the detached acromion had suffered greatest displacement. Apart from the supposition of former injury to both shoulders, causing fracture, it appears not unreasonable to agree with Smith that the detachment of the acromions was a consequence of the ravages of the disease.

7. By *Mr John Gregory Smith* (*loc. cit.*, p. 280). Case in which the *acromion was separate on both sides.* Dissecting-room specimen, female, æt. 56. A short, stout, muscular subject, had worked at wash-tub up to time of sudden death. Appearances described are those of chronic rheumatoid disease of both shoulder joints, moderately advanced. No history to the case, but the author assumes "fracture." On *right* side—"There was an oblique fracture of the *acromion process* of the scapula, which had separated about an inch of its expanded extremity; it had not united by bone, but had formed an artificial joint through the medium of cartilage, and was further strengthened by a fibro-ligamentous capsule." Sub-deltoid bursa communicated with cavity of shoulder joint by an irregular opening. Tendons of subscapularis and supraspinatus detached from their insertions and united to capsule. Tendon of biceps gone within joint. Under surface of acromion eburnated. On *left* side—"The *acromion process* of the scapula had been fractured precisely in the same situation as that of the opposite side, and formed a similar artificial joint." Sub-deltoid bursa much enlarged and thickened and communicated with shoulder joint. Tendons of subscapularis and supraspinatus partially detached from their insertions. Biceps tendon gone within joint, attached, as on right side, at bicipital groove.

Mr Gregory Smith's paper, 1834, is entitled "Pathological Appearances of seven cases of Injury of the Shoulder joint; with Remarks." The seven cases were in *five* subjects (two being in both shoulders) dissected in the Hunterian School of Anatomy. No previous history bearing on the nature of the cases, except that given in the one above related. His case 1 was a man, only left shoulder described; case 2, a woman æt. 30, only left side described; case 3, a woman æt. 38, only right side described; cases 4 and 5, that above given, with separate acromion on both sides; cases 6 and 7 (right and left shoulders of same subject), a man æt. 40. The appearances, well described, in all of them are those of the havoc wrought in the shoulder joint by chronic rheumatoid disease. The author assumes previous injury to the shoulder, apparently not acquainted with the characters presented in advanced rheumatoid disease, or with the question regarding separate acromion process. In only one of them (No. 7, above) was there separate acromion, but in one (his case 1) there was fracture of the outer end of the clavicle "which extended into its articulation with the acromion." These cases by J. G. Smith may be taken, simply, as well-marked cases of chronic rheumatoid disease, arising either from some supposed former injury, or, as held by Adams and R. W. Smith, as arising independently of injury; but in the one in which separate acromion occurred the precise symmetry of the separation is remarkable.

8, 9, 10, 11. Four of the specimens mentioned by *Mr Lane* (*loc. cit.*, *a*, p. 415 and p. 417). One (p. 415, side, sex and age not given) with great alteration of the head of the humerus and glenoid cavity. "There is also an ununited fracture of the *acromion*. Its direction is backwards and slightly outwards from a point a quarter of an inch internal to the clavicular facet." Adams and R. W. Smith would regard this case as one of advanced rheumatoid disease; Mr Lane regards the condition of the parts as "evidently produced by a fall on the shoulder." The fracture of the acromion, if fracture it was, is at a little behind the clavicular connexion, the usual situation in cases of separate acromion.

The other cases mentioned by Mr Lane (p. 417) are three of the five above referred to, given by him as "fair instances of ununited fracture of the acromion," in three of which there were "extensive rheumatoid changes in the shoulder joint." To one of these (the fourth of the five cases), as the separation was just behind the clavicle, the epiphysis theory would apply; but not to the first, in which the line of separation was just behind the front of the clavicular facet; nor to the third, in which the line was opposite the centre of the clavicular facet. These, therefore, are two cases in which separation of a part of the acromion co-existed with extensive rheumatoid changes, but in which fracture was the probable explanation, the injury that caused the fracture also setting up the rheumatoid condition.

12. The case No. 1, described by me in this paper. Subject æt. 80, case of old-standing sub-coracoid dislocation of the humerus with extensive rheumatoid disease of the shoulder joint (condition of latter noted fully in *Appendix*). Line of separation ½ inch in front of the posterior end of the clavicular facet. In this case the injury that caused the dislocation would readily account for a fracture of the acromion. The separation, however, is very close to the place at which it is usually found. My case No. 11, showing two separate ossicles, might also be included in this list, as showing some little rheumatoid disease at the acromion, but the glenoid cavity is healthy.

Interpretation of the preceding cases. Explanation of the co-existence.

Adams and R. W. Smith are eager to prove that such cases are not cases of what various authors had described as partial dislocation upwards, arising from injury, in which the long tendon of the biceps had been ruptured; but are cases of chronic rheumatic arthritis, in which the displacement upwards was secondary, from the gradual destruction of the soft parts, leading to pressure of the humerus on the coraco-acromial arch and detachment of the acromion process. That position they may be said to have fully established as against the view of original traumatic dislocation upwards, with or from rupture of the biceps tendon, and as showing that extensive changes of the soft parts and of the bones are the result of long-standing rheumatoid disease. But they rather fail to satisfy that the rheumatoid condition may not have arisen, in at least some, perhaps in most, of their cases from an injury which at the same time had been enough to cause fracture of the acromion process, though not to cause dislocation of any kind. They have also been rather led away by the supposed frequency of the co-existence of separate acromion process and rheumatoid disease of the shoulder joint. Of the 12 cases above enumerated of that co-existence they had seen only the first six, and in addition could refer only to the seventh; and although they dwell on the occurrence of symmetry in the coincidence, the fact is that in only two of these seven cases (Nos. 6 and 7) was the acromion found to be separate in both shoulders. Considering the frequency of the occurrence of rheumatoid disease of the shoulder, their use of the term "many," as applied to the coincidence of separate acromion is, therefore, an exaggeration. Thus R. W. Smith, following Adams, says (*loc. cit.*, p. 355):—

> "Among all the numerous and varied phenomena which occur during the progress of chronic rheumatic arthritis of the shoulder, there is none more remarkable, nor one for which it is more difficult to offer any satisfactory explanation, than the detachment of the extremity of the acromion process. It is most frequently to be noticed in the advanced stages of the disease, but I have more than once seen it at a period prior to the destruction of the tendon of the biceps; it is in many instances symmetrical, and in general occurs where in early life the epiphyses joined the remainder of the process. I have, however, in one instance found the entire of the acromion thus separated from the spine of the scapula. It may co-exist either with hypertrophy or atrophy of the acromion; it may occur with or without perforation of the capsular ligament; or with absorption in some instances, and displacement in others, of the tendon of the biceps, or finally in cases where the tendon is perfect as to structure and normal as to position."

In regard to the detachment of other epiphyses than that of the acromion, R. W. Smith says (*loc. cit.*, p. 356):—

> "By those who have not made the subject of chronic rheumatic arthritis a special object of their study, it might be supposed that the singular solution of continuity of the osseous tissue, such as that to which I have been alluding, was only to be met with in the acromion process. This, however, is far from being the case, for I have seen half of an hypertrophied olecranon thus separated from the shaft of the ulna, in an aggravated case of this disease affecting the elbow joint, and in several instances of chronic rheumatic arthritis engaging the articulation of the knee, which are preserved in the Museum of the Richmond Hospital, large portions of the condyles and head of the tibia may be seen separated from the remainder of the bone. In one of these examples the detached mass is of such size as to embrace the insertion of the ligament of the patella."

I leave it to surgical pathologists to say whether they find such separations of epiphyses a frequent occurrence. The following is R. W. Smith's recondite suggestion in the endeavour to account for separation of epiphyses taking place (*loc. cit.*, p. 357):—

"It would appear from the analytical investigations conducted by Mr Harper, and recorded by Mr Canton, that in this rheumatic disease of the shoulder a large proportion of the earthy matter naturally existing in the bone is removed; but I scarcely deem the knowledge of this fact adequate, of itself, to account for the solution of continuity in the acromion; and it appears to me that, in our endeavours to explain this remarkable phenomenon, we can at present only go so far as to suppose that, under the influence of this specific arthritic inflammation, the intimate structure of the bones undergoes some peculiar molecular alteration, the exact nature of which is as yet hidden from us, but the effects of which are to diminish its cohesive power, and to render it liable to yield to a pressure, which, though perhaps not powerful, is increasingly exerted upon it. In many of these cases I have found the affected bones soft, porous, and spongy: these conditions in some instances co-existing with increase of volume, constituting that state of the osseous tissue which Lobstein (*Traité d'Anatomie Pathologique*, tom. ii.) has described under the title of 'Osteoporosis.'"

Mr Lane, in the second paper referred to (*loc. cit.*, *b*, 419), disposes summarily of the view of Adams and R. W. Smith, adopted by F. H. Hamilton, and repeated in English text-books of surgery—"That many of the specimens which have been regarded as ununited fractures of the acromion are really separations of the epiphysis"—holding that such cases have been the result of some injury causing fracture of the acromion, the injury afterwards setting up the rheumatoid condition.

In this thoughtful paper Mr Lane mentions that he is struck, as every one who has been long in dissecting-rooms must have been, with the great frequency with which so-called rheumatoid disease is seen, especially in old subjects. He regards the condition not as a "disease," but as the result of pressure in over-use or disuse, influenced by occupation, or it may be lighted up by injury; modified by the vitality of the individual, the changes atrophic in feeble persons and by osteophytic growth or eburnation in powerfully-built hard-working men.

He says (p. 389), "I think I have succeeded in proving that most of the changes which are defined as indications of the presence of the so-called disease rheumatoid arthritis are purely physiological and in no way the product of any disease. They consist chiefly of what might be called accommodation changes."

Treating of "changes in the shoulder joint" in feeble old age (p. 437), Mr Lane speaks of gradual upward displacement of the humerus irrespective of rheumatoid changes. Partial atrophy of the supra-spinatus and of the upper parts of the other capsular muscles; extension of the articular surface of the humerus to the rotated-out and partially altered greater tuberosity; the ascent of the latter to the acromion, separated only by the muscles and capsule. The force that brings this about is, he says, that of the traction of the coraco-brachialis and biceps and deltoid muscles in the unused limb. That these are senile changes without rheumatoid appearances, but not often seen in the dissecting-room, as "the class from which our old subjects is drawn is one which is very much exposed to injury in every form." On this he concludes (p. 441):—

> "I have now proved that the upward dislocation of the head of the humerus can and does take place without the presence of changes which are regarded as characteristic of rheumatic gout. I have also shown that injury to the shoulder-joint which has resulted in fracture of the acromion is always followed by the development of rheumatoid changes, and that these rheumatoid changes may be produced in the shoulder joint without any upward dislocation from injury to the shoulder in which the acromion has not been fractured."

Referring to the upward changes in the advance of the rheumatoid condition, Mr Lane says (p. 419):—

> "As the head ascends, it rasps and destroys by its pressure the muscles that intervene between it and the under surface of the acromion, while they themselves tend to degenerate owing to the limited power of abduction in old age. Reaching the acromion the functional pressure exerted by the rough surface of the head of the humerus causes destructive changes in it, the periosteum being removed and the subjacent bone rubbed down and eburnated."

This clear description leaves us at the stage when, according to the separation theory of Adams, the detachment of the acromion should be effected, and it is not unreasonable to suppose that that detachment should be a further result of these "destructive changes" if it is the fact that the line of junction of the epiphysis is anatomically a weak point of the acromion. At the same time, on the supposition of fracture being the explanation, the question remains,—Why should the fracture be so often at that part, corresponding to the place of junction of the epiphysis, and just behind the acromio-clavicular articulation?

(*To be continued.*)

III.—OSTEOMALACIA: WITH A DISCUSSION OF ITS ÆTIOLOGY AND TREATMENT.

By James Ritchie, M.D., M.R.C.S. Eng., F.R.C.P., etc.

(*Read before the Obstetrical Society of Edinburgh, 12th February* 1896.)

(*Concluded from page* 996.)

Morbid Anatomy.—The morbid changes which are most apparent and constant, and which have been longest recognised, are those in the bones. The morbid process is not invariably the same; in some cases bone absorption seems to be the chief element, in others the absorption of the earthy salts, leaving a large amount of the animal basis of the bone; there is also a variable amount of a regenerative process which goes on at the same time. When a large amount of the bone salts has been removed the bones become more flexible, and in the later stages they may be cut with a knife.

In the earlier stages there exist dilatation and congestion of the medullary vessels,—Rindfleisch says a passive congestion approaching to stasis,—and small hæmorrhages in the medulla are frequently seen. In the long bones the medullary cavity is enlarged, the bone becomes more cancellous, and in the short and flat bones the cellular spaces coalesce so as to form larger cavities. On microscopic examination, the bone salts are seen to have been removed from small areas round the Haversian canals, and immediately beyond the decalcified area the bone seems to be normal. As the disease advances the earthy salts are removed from a gradually increasing depth round the canals. In the areas in which an absorption of bone is going on osteoclasts are seen just as in normal bone where absorption is taking place. There is a total absence of inflammatory exudation.

As the disease advances, when the periosteum is stripped off there are seen a number of openings in the bone, from which, in advanced cases, clear fluid exudes. On section the cancellous structure is seen to be much more open, the medullary portion of the long bones pale and oily. Ribbert takes the same view as Rindfleisch, viz., that decalcification is the earlier process, and that later the organic portion also may be absorbed. Ziegler describes the process as consisting essentially in a softening of the bones. Pommer, on the other hand, from his own investigations, believes that the process consists essentially in bone absorption, and that there is little decalcification. The existence of lactic acid in the bones has been frequently noted, but there are many cases on record in which careful examination has revealed no trace of that acid, and the question has been raised whether its existence in some cases may not have been due to post-mortem changes. Virchow found an alkaline reaction in the bones.

In osteomalacia, even while absorption is going on, there may also be seen side by side with it a process of new formation, and in stained specimens the combination of the two processes has been observed. Truzzi, on the one-hundredth day after operation, when recovery had already made considerable progress, removed a portion of a rib, and found in it changes which both Ribbert and von Recklinghausen describe to be characteristic of regeneration of bone. After fracture the callus is softer and more porous than that found in connexion with healthy bone, and it is not replaced by true bone.

Analyses of the bones have been made by several observers. The results have been widely different. This might have been predicted, because the results will vary in relation to the stage at which the disease has arrived, as well as in relation to the individual characters of the case.

	Osteomalacia.	Normal.
Mörs and Muck—		
Inorganic, ...	38·2	68·0
Organic, ...	61·8	32·0
Durham—		
Inorganic, ...	45·5	68·73
Organic, ...	54·5	31·27
Kehrer—		
Inorganic, ...	20·89	
Organic, ...	79·11	
Lehmann (average of four analyses)—		
Inorganic, ...	24·40	
Organic, ...	75·60	
Weber (average of three analyses)—		
Inorganic, ...	49·94	
Organic, ...	50·06	

The condition of the *pelvic organs* has been noted in a large proportion of the cases operated on. Fehling was the first to describe certain changes in the uterine appendages as characteristic of the disease, chiefly an increased vascularity, with the veins much increased in size, also a friable condition of the ovaries. The friability was so great in some cases as to increase the difficulty of fixing a ligature round the ovaries before their removal. The friability of the tissues is exemplified in a very interesting case, as reported by Underhill, in a woman, aged 28, who had spontaneous rupture of the posterior wall of the uterus at the time of her third confinement. The first symptoms had shown themselves during her second pregnancy, and had progressed during the third, so that her pelvis was beaked and the spine of the ilium on one side bent. Underhill performed Porro. The friability of tissues was noted, and the stump separated with unusual rapidity.

In relation to the congestion which was observed by Fehling it must be borne in mind that many of his cases were at or near the full term of pregnancy. Of Orthmann's 41 cases, only eight had congestion or increased vascular development. Von Velits was the first to call attention to hyaline degeneration in the arteries to the ovaries, and also hyaline changes in the ovaries themselves. Rossier made a careful study of the microscopical condition of the ovaries from three of Fehling's cases, and found the hyaline changes referred to. Orthmann, Truzzi, and Neumann also described similar changes. Orthmann believes that they are characteristic of osteomalacia, whereas Kleinwächter and Winckel think that there are no changes in the uterus and its appendages which are peculiar to that disease. Some consider that they are a consequence, not the cause of the disease. Löhlein, who has had a large experience, found a variety of conditions,—ovaries congested, normal, atrophied, also cystic; Neumann had a similar experience. Hofmeier, in a nullipara, aged 30, found the ovaries atrophied and the appendages otherwise apparently normal. The ovaries removed by Professor Simpson were very carefully examined by Dr Gulland at the Laboratory of the Royal College of Physicians; they were normal.

Muscles.—Friedreich found multiplication of the nuclei of the muscular fibres, and also other changes like those of progressive muscular atrophy. Chambers examined the muscles of a woman, aged 26½, in whom the disease had begun seven and a half years previously, and in whom it advanced with great rapidity during the last six months of her life. Her bones were quite soft, so that "she could be rolled up like an ill-stuffed bolster;" she decreased in height from 4 ft. 10 in. to 3 ft. 1½ in. Chambers's impression was that the muscular changes preceded the bone changes. The muscles were to the naked eye homogeneous, and under the microscope there was no trace of fibrous structure, but abundant fatty change. Weber examined the muscles of an old woman, aged 71, who had characteristic bone deformities in pelvis, spine, and thorax; he found well-marked fatty changes in the muscles. Köppen found slight microscopic changes, but he believes that the early alterations are chemical in character.

The Nerve Centres have not often been examined, but both Pommer and Renz have found evidence of central nerve disease. Further careful examination is desirable.

The Blood has been frequently examined, but no constant changes have been discovered. Von Jaksch was the first to note a diminution in its alkalinity. Neusser found the eosinophilic corpuscles increased; but he also found a similar condition in many other illnesses, such as diseases of the sympathetic nervous system, pemphigus, and even during menstruation. Fehling examined several cases, and found no increase of these cells. Chrobak and Sternberg also failed to find them. Seeligmann in a pregnant osteomalacia patient found the hæmoglobin to be 41 per cent., with an increase of white corpuscles; after operation the hæmoglobin increased to 49, then to 72 per cent., and the white corpuscles diminished considerably. Tschistowitsch found the lymphatics increased, the mononucleated leucocytes and myelocytes increased, and the red corpuscles poor in hæmoglobin.

Wislicenus found lactic acid in the dropsical fluid from a case of osteomalacia.

Bacteriology.—As the disease was noted to be endemic in certain localities, it was supposed that it might be zymotic, consequently the various tissues of the body, including the blood, have been subjected to very careful examination by means of the most recent bacteriological methods, but no constant result has been obtained. Petrone thought that he had discovered the cause in an organism which he found, which he called a *fermentum nitricum*, and with which he made a series of experiments on animals. Soon after this Winogradsky discovered in the soil an organism of nitrification, and made a number of researches in relation to it. This discovery was supposed to support Petrone's theory, which he had based on his observations. Numerous researches have been made with the view of verifying Petrone's theory, which have yielded a negative result. Löhlein had a portion of bone removed during an operation for the cure of osteomalacia, but no micro-organism was found.

RESEARCHES ON ANIMALS.—There has frequently been observed among animals a disease of which one of the symptoms is softening of the bones, and many of the animals die exhausted. They suffer pain which is aggravated by movement, they have apparently stiffness of the limbs, a straddling gait, the bones become deformed, often fractured. The anatomical conditions are said to be the same as in the human subject, a statement which has been confirmed by Prof. v. Recklinghausen. Zürn found cocci in the marrow of affected animals, which he believed to be evidence of parasitic origin; but it is to be noted that putrefactive bacteria were also present. V. Winckel, Hennig, Casati, and others state that the disease is analogous to that in man.

According to Roloff, who has studied it carefully, the disease is endemic in a well-defined area in Astrettingen, near Augsburg. It prevails more or less each winter over the district of Hinschöfen, in Villingen, Baden, and in other places. In Norway in 1869 there occurred not fewer than 2142 cases of a disease characterised by the above symptoms, and of these 448 had to be slaughtered. The disease occurs sporadically in some parts of Europe after dry summers. In Astrettingen the disease affects chiefly milk cows, rarely oxen; when the sick animals are sent out of the district they quickly recover. It is stated that in dry summers the food receives little lime from the soil; also that the soil of affected areas is damp, sandy, and poor in lime. A variety of experiments have been made with the view of throwing light on the cause of this disease. Roloff fed three cows on food free from lime, and in a month and a half they became affected with softening of the bones, but recovered when phosphate of lime was added to the food. Three cows, hitherto healthy, were fed on hay from a district noted for osteomalacia; they became affected, and were cured by the administration of phosphate of lime. Four goats fed on the same fodder with lime-water to drink did not become ill, but in other cases the drinking of lime-water was not sufficient to cure the disease. From these researches it was concluded that the disease was due to the scarcity of phosphate of lime in the food.

Heitzmann made a series of researches on animals with lactic acid. He used a pure acid, and administered it in some cases with food, in others subcutaneously. The animals which he employed, fifteen in number, were dogs, cats, rabbits, and one squirrel. In two weeks the flesh-eaters showed swellings of the epiphysial ends of the long bones, swellings at the junctions of ribs and cartilages, also diarrhœa and wasting. Later the swelling disappeared, the long bones and scapulæ became flexible, the long bones also liable to fracture. The microscopical characters resembled those of osteomalacia in man. In the herbivora, on the other hand, there was no thickening of epiphyses, the cortical layer of bones was thinner, and they were brittle. From these experiments Heitzmann concluded that in carnivora lactic acid produces, first rickets, later osteomalacia; in herbivora there is produced osteomalacia without a stage of rickets. Siedamgrotzke, on examination of the bones of animals treated in this way, found a want of salts, but no evidence of the changes characteristic of rickets.

Heitzmann notes that a young woman who fed the animals on which he experimented gave birth to a 7½ months' child which exhibited evidences of a high degree of rickets. He asks the question whether it were possible that the manipulation of the acid had any causal relation to the rickets in the fœtus.

DIAGNOSIS.—There is not as yet any means of diagnosing osteomalacia in the early stages. It is most frequently mistaken for *rheumatism* or *spinal disease.* If there be pain in the sacrum or pelvis aggravated by pressure, and if along with this there are spinal symptoms, such as increased knee-jerk, we may suspect osteomalacia. The suspicion would be strengthened if with these symptoms there were inability perfectly to lift the feet in walking, and thereby a waddling gait were produced.

When deformities are produced and the patient diminishes in height the diagnosis is easy, except in so far that *osteomalacia carcinomatosa* presents the same symptoms. A history of previous cancerous disease, or evidence of its existence elsewhere, might enable a diagnosis to be made, and it is stated that in the latter disease the patient's general condition more rapidly fails.

From *rickets* there should be no difficulty: this is a disease of early life; osteomalacia affects adults only. Vierordt holds that osteomalacia in children has not yet been proved. In rickets there is swelling at the epiphyses of the bones; there is not much pain; the limbs are often bent. In osteomalacia there is no swelling at the ends of bones; but there is considerable pain, which is aggravated by pressure; and usually the lower limbs are straight.

Examination of the blood and of the urine are not of much value in aiding diagnosis.

TREATMENT.—After reading Senator's paragraphs on the prognosis and treatment of this disease, in von Ziemssen's *Cyclopedia of Medicine*, we can hardly fail to be struck with the almost hopeless view which was taken of osteomalacia at the date at which his article was written, viz., twenty years ago. Although we are warranted in now taking a much more hopeful view, there still exists a considerable diversity of opinion as to the best method of treatment. V. Velits, Stern, Harajewicz, Preindlsberger, and Neumann look upon oöphorectomy as an infallible cure; but there are on record several cases in which that operation was not followed by recovery, and there are also several which have recovered under medical treatment only, therefore we are justified in still considering the treatment under two divisions, viz., medical and surgical. That which should be adopted in any particular case will depend upon the stage of the disease, and also upon the existence or absence of pregnancy. There are those in which the affection advanced steadily during pregnancy, but apparent recovery followed confinement. There are also on record several cases in which recovery took place after the climacteric. It should also be remembered that in some women the disease did not show itself until after the climacteric had passed.

Internal Remedies.—Labadie, Labusquière, von Braun, Trousseau, and Busch have obtained good results from internal treatment alone. A very severe case of Trousseau's, which has been already referred to, recovered under the use of cod-liver oil. Trousseau also records another case of which the cure was complete after treatment with that remedy. Allison's case, which had slowly progressed for twenty-four years until the woman was in a condition of extreme deformity and emaciation, began to improve soon after the administration of bone marrow,—a glycerine extract from the cancellous tissue of the leg bones of the calf, with some admixture of bone salts.

The internal remedy which seems most frequently to have been followed by benefit is phosphorus. Von Winckel, Latzko, and Bamberger have recorded cases of cure after its use. Sternberg says that large doses of phosphorus with patience for a long time are a veritable specific in early stages. He records four cases of his own and 17 by others which have been cured by phosphorus. Neumann had one patient whose uterus and ovaries were removed at term. She improved, left bed on the nineteenth day; but the pains returned, and by the twenty-seventh day she was worse. Under treatment with phosphorus she recovered so as to be able to walk without support. He had a similar experience in another patient. Chrobak had two cases, one of oöphorectomy and one of Porro, which did not recover until after treatment with phosphorus; and Weil records a case of a woman, aged 50, in whom the disease came on at the menopause, who was cured by that drug.

Baths.—Pelezar treated eight well-marked cases of the disease, ill from two to eight years, by means of sodium chloride baths, and internally lime-water in milk. The patients experienced relief after the first few baths, in from four to eight weeks there was great improvement, and in some it is stated that bony deformities disappeared. He attributes the good effects to an improvement of nutrition and stimulus to metabolism by the baths. Weisz records two cases of women in middle life who were cured by the use of sulphureous waters and sulphur mud baths. Fischer had a case of a multipara in whom there was considerable deformity. Under treatment by phosphorus and salt baths she recovered, and passed safely through another pregnancy without recurrence of the disease.

Chloroform.—Petrone, who believes that the disease is caused by a micro-organism—*fermentum nitricum*—advocates the use of chloroform inhalation as a germicide. He advises that the narcosis be prolonged for three-quarters of an hour, and in some cases he has administered chloral in doses of 2 grammes daily for a week. Tibone and La Torre also gave chloral with success. Fehling, Chrobak, and Trotta each tried several chloroform narcoses, and also gave chloral hydrate, but without benefit. Latzko advises the trial of chloroform narcosis. He says that in the majority of cases it leads to a marked amelioration of the pains, but that these recur with extreme rapidity. In all the cases, except one in which the result was permanent, after a longer or shorter delay the pains recurred with the return of menstruation. He nevertheless advised that this means be tried along with the internal administration of phosphorus. Fehling had a case in the early months of pregnancy which was treated both with chloral and with prolonged chloroform narcosis, nevertheless the disease progressed rapidly. Neumann, in Case No. 2 of his series, tried chloroform, with only temporary amelioration. The advocates of the chloroform treatment point to a case of Schauta's in which ether was given as the anæsthetic for the removal of pyosalpinx; no improvement in the osteomalacia followed, but after chloroform narcosis recovery began. Against this there may be placed cases of Kummer's, in which anæsthesia was produced by ether for the removal of tubes and ovaries, and the results were as good as those in which chloroform was used. In the majority, however, internal remedies were not followed by cure of the disease.

Surgical.—The present surgical method of treatment has been gradually evolved out of the results of operation at full term when deformed pelvis prevented delivery *per vias naturales.* The first recorded case in which an osteomalacic pelvis was a hindrance to delivery is stated to have been by W. Cooper in a letter to Wm. Hunter in 1776. The first Cæsarean section in a case of this disease was by Stein, senior, 1783. Von Winckel, senior, before 1861, performed Cæsarean section thirteen times for osteomalacia, with a result favourable to the mother on six occasions. Von Späth and von Braun removed the uterus and ovaries expressly for the cure of this disease, but both cases ended fatally. Fochier (Lyons) in 1879 and Levy (Copenhagen) in 1880 expressed their opinion that the removal of uterus and ovaries would be a suitable operation for its cure. Kleinwächter and Sänger had recoveries from osteomalacia after having performed Porro's operation, and believed that the benefit resulted from removal of the ovaries.

Reference has already been made to a case in which Underhill performed Porro's operation for rupture of the uterus; cure of the osteomalacia resulted. Fehling enumerates 24 cases in which, up to 1888, Porro's operation had been performed for the cure of this malady with successful result. In 1886 he thought that the benefit was due to the removal of the ovaries, and in January 1887 he performed his first double oöphorectomy for the cure of the disease, also twice early in 1888. At the Gynæcological Congress in Halle in 1888 he said that in such cases in which other methods of treatment had failed, if the patients had already several children and were unfit for work, he would remove the ovaries alone. Accordingly, on 9th July of that year, in such a case he performed double oöphorectomy for the cure of osteomalacia, and a second one shortly afterwards. Since that time he has removed the ovaries even from several non-puerperal women for the cure of the disease. This operation has become an acknowledged method of treatment. Few cases have been recorded in this country, but Rasch in March 1892 treated a woman, aged 41, in whom the disease began in 1890, after her third confinement. After a new conception in October 1891 she got rapidly worse. Rasch in March 1892 induced abortion, and eight weeks later, as there was no improvement, he removed the ovaries. This was followed by recovery. Von Winckel in May 1893 published a paper in which he records 40 cases of removal of the ovaries alone. Of these he had followed 16 for a long enough period to be sure of the result,—in 12 he was able to record a cure, and in four improvement. He points out that the operation cannot be said to have a definite and certain result. Truzzi in 1894 records in a tabular form the particulars of 98 operations on 97 patients for the cure of osteomalacia. In 82 of these the ovaries alone were removed, in eight there was in addition ventrofixation of the uterus for retroflexion, one in which the tubes also were removed because of pyosalpinx; in six the uterus also was removed. Of these only 52 had observations made at a time sufficiently remote to be sure of the ultimate results. These were as follows:—

Complete cure, . . .	36	Improvement, . .	3
Almost complete cure, .	4	Persistent relapse, .	5
Cure consecutive to relapse,	3	No change, . . .	1
	43		$9=\frac{1}{6}$

Truzzi questions whether, as recovery has not in several cases followed the removal of the ovaries, it might not be better to remove also the uterus. He believes that a more profound and extensive mutilation of the sexual apparatus will have a more considerable influence on the disease. In one of his patients after double oöphorectomy (No. 58 in his table), relapse occurred; fifteen months later he removed the uterus, and very marked benefit resulted. But it must be remembered that there have been failures after removal of the uterus as well as ovaries. Chrobak, Neumann, and Beaucamp record such cases. Chrobak's case was afterwards cured by the internal administration of phosphorus. Von Späth performed Porro's operation, but left the ovaries, in a woman aged 70; she completely recovered. It must, however, be borne in mind that after removal of the uterus the ovaries quickly atrophy. In 1889 Baumann collected statistics of 44 cases in which Porro's operation had been performed for the cure of osteomalacia; 18 died from the results of the operation, three died later from other diseases, two could not be traced, 21 recovered, but of these there were four in whom there was only improvement in symptoms. Seeligmann gives the death-rate after Porro as 30 to 36 per cent., after oöphorectomy 5 per cent. Harris has collected statistics relating to 500 cases of various diseases in which Porro's operation has been performed since 1876. In the first hundred cases the mortality was 60 per cent., but in the last hundred only 14 per cent., and of these 14 there were five who were ill with fever before the operation. He also gives the mortality in different countries, varying from 64·4 per cent. in France to 22·1 per cent. in Austria. Some operators have had extraordinary success,—Breisky 11 consecutive cases, Riedinger and Leopold each seven cases—all without fatal result.

It has been claimed that the curative results in relation to osteomalacia are more favourable after Porro than after oöphorectomy. Statistics do not bear out this statement; and when, even with improved methods, we note the much lower mortality after oöphorectomy, it is evident that the introduction of the latter operation by Fehling as a curative measure is a distinct advance. In 15 cases Cæsarean section alone was performed, but the curative results in relation to osteomalacia were not so good as after Porro; in nearly all of the cases there were relapses, specially with the recurrence of pregnancy. If Cæsarean section be performed, the ovaries should be removed in order to prevent the recurrence of pregnancy.

Dümmock performed symphyseotomy on a Hindoo woman to permit of delivery; she completely recovered from the osteomalacia. A very interesting case by Seeligmann is worthy of note in relation to treatment. The case was a very severe one. The woman had lost very much in height. Six days after having performed Porro, while the bones were still soft, he applied extension with a wonderful result in the increase in height. After seven years of bedridden life with severe pain and great deformity, the patient recovered the power of walking and of attending to her household duties.

If we sum up the foregoing experiences it would appear—1. That in non-pregnant women and in men a sufficient number of cases of recovery after internal treatment has been recorded to warrant its being tried, provided the case is not very advanced.

The methods of medicinal treatment which have proved most successful are favourable hygienic conditions, good food, the internal administration of phosphorus, bone marrow, and the use of salt baths. It should also be remembered that there have been a few cases of favourable result after chloroform narcosis. Pyschological changes have been reported in some women after the ovaries have been removed, therefore that kind of treatment should not be recommended until other remedial measures have been fairly tried; but both in medicine and in surgery the weal of the patient occasionally demands that we choose the less of two evils; therefore,

2. If these fail, or if the case be advanced with considerable deformity, then oöphorectomy should be performed without delay in order that bone changes and deformities may, if possible, be prevented. At the same time it might be well to bear in mind Löhlein's view, that oöphorectomy does not directly cure but is a substantial aid in that direction, therefore cases should be kept under observation for some time after operation.

3. In pregnant women having such a contraction of the pelvis that the birth of a viable child is impossible, operation must be performed sooner or later. It has been much discussed whether abortion should be induced and at a later date the ovaries removed; or whether, if the disease be not progressing rapidly, it would not be better to wait till term, then to operate, either by Cæsarean section and removal of the ovaries, or by a modified Porro. Velits advises Cæsarean section and removal of the ovaries, but several others, among them Neumann and Chrobak, advise the removal of the ovaries and uterus after the method adopted by Chrobak.

If the disease is progressing rapidly, operation should be undertaken without delay.

After operation one of the striking features is the rapid disappearance of pain,—pain which was elicited by pressure on the bones, and which was so greatly aggravated by movement. The absence of this pain renders it possible for the patient to undertake movements which were hitherto avoided, but in advanced cases the recovery of complete control of the muscles is slow, seeing that in them the want of power arises in some measure from the approximation of the origins and insertions of the muscles. In the majority of cases there is no return of menstrual flow after the removal of ovaries. It recurs more frequently in those cases in which the operation has been done for fibroma than for osteomalacia. Of 14 cases in which Fehling performed double oöphorectomy for osteomalacia there was a slight discharge on four occasions, and in one case only a copious flow. Among 78 cases collected by Truzzi he found that in seven there was pseudo-menstruation.

ETIOLOGY.—Regarding the etiology of the disease, there are four classes of theories.

1, Zymotic; 2, Reflex-nervous; 3, Dietetic; 4, Altered Chemistry.

1. *Zymotic.*—Petrone believes it to be due to a micro-organism —*fermentum nitricum*—which occurs in the soil, and produces in the system an acid which dissolves out the earthy salts from the bones. He believes his theory to be supported by his discovery of nitrites in the urine. He made pure cultures of the organism, which he obtained from patients who were suffering from osteomalacia, injected these into dogs, and found that these contracted a disease similar to that in man. His theory received support from the discovery in the soil, by Winogradsky, of an organism of nitrification. This would, according to Petrone's theory, explain the endemic character of the disease. This theory receives support from Latzko, Baumann, and others.

Kehrer classifies the disease among endemic zymotic diseases, such as beri-beri, and therefore to some extent supports Petrone's theory. Löhlein thinks that probably specific germs exist, but that they have not yet been demonstrated. Winckel also considers the disease to have a parasitic origin. The organism which was described by Petrone has been carefully sought for by other observers, but they have failed to find it in the bones or in the soft parts during life, as has already been pointed out. The changes in the urine which he describes are not characteristic of osteomalacia; the nitrites found by Petrone do not occur in the fresh urine of patients suffering from that disease. Zuccaro conducted a series of careful observations in relation to this subject. He found nitrites twenty-four hours after emission, but never in fresh urine. This rendered it probable that they arose from decomposition. The examination of the urine of other sick and of healthy persons yielded similar results. Trotta made numerous observations in gynecological and in surgical cases, as well as during pregnancy, and never found in recently passed urine the reaction described by Petrone; but, like Zuccaro, he found it in older urine. He also examined the urine of a patient suffering from osteomalacia, with similar results. Tschistowitsch also found nitrites in the urine, but he obtained a similar reaction in the urine after pneumonia, pleurisy, and other diseases. Cattle affected with a disease said to be identical with osteomalacia recover when they receive an abundance of phosphate of lime in the food. This is not in keeping with a zymotic theory of the disease.

2. *Reflex-nervous.*—Fehling believes the disease to be a trophoneurosis of the osseous system, due to a pathological activity of the ovaries. The latter are, he thinks, the point of origin of a reflex influence to the vaso-dilators of the vessels of the bones, determining a passive hyperæmia, and a consecutive resorption of the elements of the bone. Castration by suppressing the focus of origin of these reflexes, causing the action on the vaso-dilators, would have as result the contraction of the vessels, and a cure of

the disease. Thorn, Hofmeier, and others support Fehling's theory, whereas von Winckel, Kleinwächter, and others reject it. Fehling finds in the congestion of the uterus and its appendages, and in the amyloid degeneration of the ovaries, which has been found by many observers, evidence in support of his theory; but von Winckel points out that of Orthmann's 41 cases only eight are reported to have had congestion, or increased vascular development. Various observers believe that the changes in the ovaries are the result and not the cause of the disease.

The strongest argument against Fehling's theory is afforded by those cases of recovery from the disease in which the ovaries were left after Cæsarean section, also those cases in which the removal of the ovaries did not produce cure. Aly, Fehling, Chrobak, Chiarleoni, and Schauta have each reported a case of non-recovery after removal of the ovaries, and Truzzi reports two among his cases. It is to be noted that in one of these the left ovary was enveloped in adhesions,—possibly it was not entirely removed; the case improved after vaginal hysterectomy. In the other case, even after operation, there were attacks of metrorrhagia, accompanied by exacerbations of osteomalacia. Von Winckel opposes Fehling's theory because of a variety of considerations, the most important of which are,—that the effect of menstruation on the disease is by no means constant, that if it depended on menstruation there should be an increase of pain on the appearance of pseudo-menstruation, which von Winckel finds to set in frequently from one to four days after operation; whereas Fehling shows that at this time there is a striking decrease in pain, that the anatomical changes in the ovaries and their surroundings are not characteristic of osteomalacia, and that the disease rarely occurs in those who suffer from affections which are marked by congestion (tumours, displacements, etc.).

3. *Dietetic.*—Gelpke divides the causes of the disease into three groups:—1, Sexual, in pregnant women; 2, Hygienic,—puerperal osteomalacia attacks only those having unfavourable surroundings; 3, Territorial. He believes that in certain districts the food is poor in phosphoric acid, and that in these districts there gradually arises in a population bones with a small power of fixing bone salts. These pathological constitutions transmit themselves from generation to generation, and so there is evolved in that population a latent osteomalacia; then there comes in the influence of pregnancy, lactation, damp dwellings, or poor food, and the disease breaks out.

Von Braun blames poor food and unfavourable dwellings for the majority of cases. Conheim thinks that the disease is due to an altered relation between the supply and destruction of lime salts, and states that in pregnancy there is a greater demand on the tissues of the mother.

There are two facts which militate against the theories that the disease is due to a want of lime salts in the food or drink. 1*st.* It has long since been demonstrated that the earthy salts of the bones are not derived from drinking water,—that some of our largest boned communities use water which is peculiarly free from lime. 2*nd.* Whereas improper or insufficient food may aid in the production of the disease in those who are predisposed to it, by lowering the general tone of the system in a way similar to that of other debilitating influences, it is to be noted that the disease occurs in well-fed, comfortably-housed individuals, and that in some of the districts in which the disease is common, such as Rhineland, the general condition of the people is much better than that in other nations; for example, in Ireland and in parts of Russia, where the disease is hardly known. Further, softening of the bones is not one of the incidents in the history of starving populations during famine.

Altered Chemistry.—After the discovery of lactic acid in the bones by Hermann and others, the theory was formed that this acid acted as a solvent, and removed the earthy salts from the bones. Schmidt believed that phosphoric acid was the solvent. Rindfleisch considers the disease to be a malnutrition, and points to the dilatation and congestion of medullary vessels, the constant presence of extravasations, the total absence of inflammatory infiltration, and finds in these conditions evidence of a passive congestion approaching stasis. He points out that there is an excess of CO_2 in blood which stagnates, and ventures the hypothesis that this may be the solvent which removes the bone salts. He further points out that in old people the periosteum becomes thicker, more vascular, that those vessels which pass from the periosteum to the surface of bone become congested, and that these changes are associated with a peripheric absorption of the cortical layers of bone. But if this disease were due to a continued passive congestion, we would expect that in diseases characterised by an aggravated condition of passive congestion similar changes should occur; they are not found.

Senator thinks that as the changes undoubtedly spread from the bloodvessels, and their results are like those produced by an acid, and as an abnormal amount of acid has been demonstrated in the bones, we are justified in attributing the altered state of the bone tissue to a perverted condition of the blood, viz., an insufficient alkalinity of it.

Bouchard thought that the disease is not simply insufficiency of alimentary materials, nor a want of phosphates, but that "it is above all due to a vice of nutritive changes, which leads to the accumulation of organic acids, which may enter in excess because of abnormal digestive fermentations, or it may be from intra-organic fermentations, or nutrition goes on too slowly and diminishes oxidation processes. A large number of hygienic circumstances affecting respiration and circulation, or influencing the nervous system, may alter the activity of metamorphoses, and may create a feeble or delayed nutrition. In all these circumstances organic acids may not be burnt off, the alkalinity of the blood diminishes . . . the intimate constitution of the tissue is altered by the ready solution of, or the interference with, the deposit of mineral elements."

Orthmann questions whether there is not an influence between the changes in the ovaries and the broad ligaments—the increased congestion of them—and the congestion of the bones. From this congestion there arises a diminution of the hæmoglobin, a diminution of alkalinity, with a solution of lime salts from the bones.

As a criticism of those theories which account for this disease on the ground of a diminution in the alkalinity of the blood, with an excessive amount of lactic acid or of some other acid in the bones, it may be pointed out that in some cases of osteomalacia which were carefully examined no lactic acid was found, and no diminished alkalinity of the blood; that in many diseases, such as gout and rheumatism, there is an excess of acid present without softening of bones. It must also be constantly borne in mind that the removal of the bone salts is only an early stage of the disease, and that later the animal basis is also removed, that portion which is not soluble in dilute acids; further, that by means of osteoclasts the bone structure may be removed.

Ducrest made a series of investigations into the modifications experienced by the entire organism during gestation. He found that pregnancy causes a degree of softening of the bones. From this Trousseau concluded that there exists in pregnant women a certain kind of rickets, of which osteomalacia may be considered as a more advanced stage.

Hanau supposes that there is a certain physiological degree of bone softening in each pregnant woman because of the call upon her for a supply of lime to the growing fœtus. In certain districts and in predisposed individuals this passes into a pathological condition, and osteomalacia results.

Truzzi, as a result of his experiments on animals, in which he induced anæmia by artificial methods, leans towards the hypothesis of Senator, Eisenhardt, Sasse, and Ribbert. He thinks that the origin of osteomalacia must be sought in biological facts of bone marrow, which in the female are intimately associated with menstruation, pregnancy, and the whole of sexual life. He refers to the researches of Foa and of Marchiafava, which show that bone marrow tends to become redder during pregnancy, and that there appear a number of nucleated red corpuscles. Litten, Orth, Bizzozero, Golgi, Foa, and Salvioli think that in the pregnant woman there is an increased activity of the hæmopoietic function of bone marrow, probably in order to a compensatory regeneration of the elements of the blood. This great work of blood reproduction, which may become abnormal, the low vitality of imperfectly formed elements, and as a consequence their more easy destruction,—above all, the numerous extravasations seen in osteomalacia, the decomposition of lecithin, and the production of acids, lead Truzzi to consider that the study of bone marrow in relation to osteomalacia is of the greatest importance. He thinks that it is in the conditions of this tissue, in its transformations during sexual life, that we should recognise, if not the chief reason for osteomalacia, at least one of the most important factors which disposes the skeleton of woman to this dire malady during sexual life.

Truzzi's argument is one of importance, because doubtless the effect of pregnancy and of menstruation on the changes in bone marrow form an important element in the production of the disease, and may account in some measure for the exacerbations which occur occasionally at the menstrual periods, and more frequently during pregnancy, but that condition is not of itself sufficient to originate a disease which occurs in males, in nulliparæ, and even after the climacteric period, also after the ovaries and even the uterus have been removed.

Curatulo, according to the general doctrine of Brown-Séquard, believes that the ovaries introduce into the blood a secretive product, the chemical constitution of which is still unknown, capable of facilitating the oxidation of the phosphoric organic substances which supply material for forming the salts of the bones. He made a series of experiments on bitches, removing their ovaries. They were fed on a constant diet both before and after operation, and the nitrogen and phosphorus were carefully determined. He found no change in the secreted nitrogen, but the phosphoric anhydride was after operation diminished by one-half,—before operation, 1·50 grammes; after operation, 0·75 grammes. Curatulo believes that this change is due to a diminished oxidation of phosphorus existing in an organic form in the tissues, which being stored by the system and combining itself with Ca and Mg, would accumulate in the bones in the form of phosphate of lime and magnesia. This observation is of great interest in relation to the disease; at the same time, it does not account for its production or its recurrence after the ovaries have been removed. In the absence of further research the precise significance of these observations cannot be ascertained. Is the diminution due to a diminished metabolism of lecithin and nuclein, or to diminished nutritive changes in the bones? What is the relative proportion of phosphorus excreted in the stools, and whence is it derived?

Several of the foregoing theories leave out of view the facts that not only the salts but also the organic parts of the bones are removed,—in other words, that the essential character of the disease is trophic. The trophic nature is borne out by the microscopic characters of the bone both during the stage of advance and also during recovery. Another fact not sufficiently recognised is the early date at which nervous phenomena appear. Several of the nervous phenomena have been regarded as the results of pressure, but they arise early in the disease before compression of nerves is possible. So frequent and prominent are nervous phenomena that the disease has been frequently diagnosed to be disease of the spinal cord. The early increase of patellar reflexes, the ankle clonus, muscular spasms, all show that the cord is involved. During the recovery stage after operation the rapid amelioration and even disappearance of the pains on movement and on pressure also indicate that the spinal cord is affected. Fehling's theory recognises the intervention of the nervous element, for he described the disease as a tropho-neurosis of the bone. But he considers it to be of reflex origin, and places the source of irritation in the ovaries. He says that after the results of Porro's operation and of castration, there can be no doubt that it is the pathological action of the ovaries which causes the softening of the bones. How, then, shall we account for those cases which arise after the ovaries and tubes, and even also the uterus, have been removed, and for those which occur in men? We shall leave out of account those which arise after the climacteric, because it might be said that, although the ovaries were obsolete in relation to ovulation, they might be the centre and source of some irritating process. To explain the existence of the disease in the former cases, either some other source of reflex irritation must be sought, or the origin of the disease must be located primarily in the spinal cord. The writer believes that, taking into consideration all the facts, the explanation must be sought in a primary affection of the nerve cells in the cord. The precise nature of the lesion we do not know; probably it involves some of the large caudate cells in the anterior cornua. The lesion is not inflammatory; the rapid improvement which, in most cases, takes place after operation shows that it is not one of the gross organic lesions; it must, however, be of such a nature that it may be benefited by phosphorus and such measures as improve the general nutrition, because cases have occurred which have been so completely cured by the use of these remedies that they have afterwards withstood the usually unfavourable influence of the recurrence of pregnancy. Lowered vitality is generally associated with increased irritability and perversion of function. This sequence of events is frequently seen in relation to the cells of the cerebral cortex,—in certain predisposed individuals malnutrition is followed by increased irritability, excessive action, and perverted function of the cortical cells, as seen in several forms of insanity. The disease seems in anatomical characters to be allied to fragilitas ossium of advanced life, a disease in which the nerve cells are presumably in a condition of malnutrition. The cause of this malnutrition, whether some peculiarity of blood supply or some inherited peculiarity of nerve cell, must be of such a nature that the adjacent cells may also be affected, and so lead to other spinal symptoms. In osteomalacia there are points of resemblance to

Charcot's disease, and also to that spinal condition which in locomotor ataxia leads to spontaneous fractures of bones. In the former disease there are observations which show changes in some of the large caudate cells in the anterior cornua, and in the latter disease there is evidence that the nutrition of the cells is involved. Both in osteomalacia and in locomotor ataxia the amount of callus produced after fracture depends upon the condition of general vitality of the system; in neither of them is the callus transformed into true bone tissue. An analysis of the affected bones in locomotor ataxia by Regnard shows a similarity to the results obtained in analysis of bones from osteomalacia. Inorganic constituents, 24 per cent. instead of 66; organic constituents, 76 instead of 33 per cent., largely composed of fat.

If we acknowledge that the cells in the cord which preside over the nutrition of the bones are in this disease in a condition of low vitality and increased irritability, the effect of reflex irritation from the ovaries or other organs at the menstrual periods and during pregnancy might be sufficient to aggravate or excite the disease, and prolonged lactation, damp, and other unfavourable hygienic conditions, by lowering the general nutrition, would affect also the nerve centres. If we recognise that the origin of the disease lies in the central nervous system, we afford a ready explanation of the endemic character of the disease in certain localities, because in no class of diseases is heredity so marked as in those of the nervous system. A particular example in this relation is furnished by Kehrer, who records the cases of a woman and her two sons being affected by it.

LITERATURE.

Without expressing any opinion on the relative merits of the papers enumerated in the subjoined list, it may be stated, for the benefit of those who wish to study special departments of the subject without perusing all the more recent literature, that they will find the pathological anatomy very fully described by Ribbert; a systematic account of the disease by Gelpke, Vierordt, and v. Winckel; recent clinical investigations by Fehling and Neumann; tables of cases by Truzzi, Gallia, and Kummer. Truzzi's Table is appended to this paper.

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IV.—IS INHERITED SYPHILIS CONTAGIOUS?

By ROBERT WILLIAM PARKER, M.R.C.S. Eng., Senior Surgeon to the East London Hospital for Children, and to the German Hospital, London.

"Unfaith in aught is want of faith in all."

A TWENTY years' experience at a children's hospital, situate in a poor and populous district of London, has given me ample and varied opportunities for studying the subject of so-called "inherited syphilis" from a practical standpoint. During this period I have passed through various phases of belief and unbelief. After leaving behind me the earliest years of my independent work, during which I saw everything in the light of my teachers' and text-book doctrines, I began to see how widely the teachings of an out-patient room differed from the standard of even the best text-book. Little by little the old beliefs were shaken, then cast aside, to be taken up again and again before being finally discarded.

Few things are more certain than that a large number of infants, the offspring of syphilitic parents, sooner or later manifest symptoms of a disease which is called "inherited syphilis." Few things are more curious than that lesions supposed to be typically syphilitic are found in children neither of whose parents shows any traces of syphilis, and from whom, after careful inquiry, a history justifying syphilis cannot be obtained. On the other hand, a certain number of children, one or both of whose parents are obviously syphilitic, never at any time of their lives show the slightest signs of an inherited taint.

These circumstances lead me to ask,—Is not inherited syphilis largely a misnomer? Is all disease inherited by an infant from syphilitic parents really syphilis?—*i.e.*, Is this disease specifically contagious? Does it breed true?

What is to be considered the crucial test of syphilis? Many of the criteria which we look for as essential in the acquired form are absent in the inherited variety. The latter is as irregular and uncertain in its earlier manifestations as the acquired disease is typical. Contact syphilis is at first purely local in its effects, and can only be conveyed by the direct transference of the particulate, specific poison, which, after an almost identical incubation period, will produce almost identical lesions in an almost identical sequence through an almost unlimited series of individuals; while in inherited syphilis there is not only entire absence of the typical primary lesion, but the resulting later or secondary lesions vary in kind, in intensity, and in the period of their outbreak. There may even be no manifestations at all during infancy,—*i.e.*, the true secondaries may be completely omitted; then in subsequent years, sooner or later, some eye, ear, or bone lesions (amongst others) may occur, which syphilographers unhesitatingly pronounce to be characteristic of the inherited disease. Further, the subjects of this inherited syphilis do not propagate their own disease to their descendants; on the other hand, when exposed to contagion, they are liable to acquire syphilis with its usual primary and later manifestations.

Contact syphilis in young children is just as marked and characteristic as in adults, though it usually runs an acuter course; it is very contagious, and when a child is accidentally infected, unless the nature of the disease is at once recognised, there is invariably a rapid and extensive propagation of the disease. Colles[1] says:—" . . . It appears to be infinitely more contagious, for very rarely do any escape who are for a short time exposed to its infection." I have seen two very extensive outbreaks of chancre syphilis among children on their return home from the hopfields of Kent; the accommodation for these people is often of a very primitive kind, and a good deal of promiscuous contact and intercourse take place, in consequence of which children acquire the disease, and propagate it among their companions; the use in common of drinking-cups, spoons, forks, towels, or bed linen is the means by which the disease is spread to the children in the first instance,—from one family the disease spreads to another.

In contrasting such cases of acquired syphilis with cases of inherited disease in exactly the same social surroundings we are struck, first and foremost, with the absence of contagiousness in these latter; even in poor homes, where there is little to save from and much to favour the spread of the disease, infection from congenital cases rarely—very rarely—occurs, if the experience of those specially connected at the present time with children's hospitals in London and elsewhere can be relied upon.

I will briefly summarize my own personal experience on this question. Since the year 1872 I have been closely connected with children's hospitals, and have devoted myself very largely to the study of children's diseases. For close upon twenty years I have been on the staff of the East London Hospital for Children at Shadwell. Here there is a special ward for infants, in which a large number of severe cases of inherited syphilis has been treated. Many of these cases have remained under care for weeks together, and yet during this long period, so far as I can remember and ascertain, not one single case—not even one suspicious case—of syphilitic infection has been observed among the resident officers, the sisters, the nurses, or among the other children nursed in the ward. Further, among the thousands of out-patients that have been treated during the same period, neither I nor any of my colleagues remember ever to have seen any cases of contact syphilis infected through these infants suffering from so-called inherited syphilis, notwithstanding that the conditions of their mode of life and social surroundings—poverty, overcrowding, imperfect sanitary and washing arrangements, the use in common of drinking vessels, towels, W.C.'s, etc.—are eminently calculated to favour the spread of contagious disease when it is present. How different is this experience from that of Abraham Colles, for instance, amongst others!

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[1] *Practical Observations on the Venereal Disease*, p. 302. London, 1837.

Among authors of repute who hold the non-contagious view of inherited syphilis, I will mention Dr Günzburg,[1] Physician to the Foundling Hospital in Moscow. I translate the following paragraphs, *verbatim*, from his interesting paper:—" . . . In the Foundling Hospital at Moscow the children are distributed in eighteen wards, of which eight wards are reserved for the sick children and one ward for syphilitics. As soon as any child in any ward shows symptoms which are suspicious of syphilis, the said child is immediately transferred into the special syphilis ward. The wet-nurse who has hitherto suckled this child is given the option to continue suckling it or not, after the nature of the disease and the possible consequences have been explained to her. The majority of the nurses usually remain with the child, either out of sympathy or custom. After four to six weeks' treatment the child has recovered, and is sent into the country; or it dies from atrophy, enteritis, or broncho-pneumonia. The wet-nurse, who has remained healthy, thenceforth remains in the syphilis ward, if she so wills, and suckles newly-arriving syphilitic children. In this manner it becomes possible to observe and watch over the state of health of such nurses, who during long periods suckle syphilitic children. The following Table is the result of our observations on 31 wet-nurses during the years 1868-69-70. We have confined ourselves to these nurses only, and not to the whole of the nurses employed, because, in order to avoid errors, we desire to lay weight on observations which have extended over a considerable period. Thus, of the 31 nurses, not a single one passed less than six months in the syphilis ward, the majority many more, some even two years.

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[1] *Oesterreichisches Jahrbuch für Pædiatrik, neue Folge*, Band i. pp. 166–179. Wien, 1872.

TABLE.

Wet Nurses.	Sojourn in the Syphilis Ward.	Number of Children Suckled.
1 suckled during	24 months	11
1 " "	23 "	9
3 " "	19 (3 × 19 = 57)	16
1 " "	18 months	6
1 " "	17½ "	5
1 " "	17 "	5
1 " "	16 "	5
4 " "	14 (4 × 14 = 56)	16
5 " "	12 (5 × 12 = 60)	16
2 " "	11 = 22 months	6
2 " "	10 = 20 "	6
1 " "	9 months	3
1 " "	8 "	2
6 " "	7 = 42 months	12
1 " "	6 months	2
31 nurses.	395½ months.	120 children.

"As will be seen from the table, 31 healthy wet-nurses suckled 120 syphilitic children during a total period equivalent to 395½ months, and remained perfectly well. The longest residence in the syphilis ward was 24 months, the shortest 6 months. The woman who suckled the greatest number of children (11) passed two years in the ward. An average gave each nurse 382 days' residence in the syphilis ward and 4 children to suckle."

A further argument against the contagiousness of inherited syphilis may be found in the extreme rarity with which syphilis is propagated by the operation of vaccination. If so-called inherited syphilis, a very common disease, and one which so often remains latent for many weeks, were contagious, there would, I think, be very much more vaccination syphilis than appears at present. The remarkable circumstance that these cases, when they occur, occur in larger or in smaller groups or epidemics, has, I think, a significance which is not to be mistaken. In the 12th Report of the Medical Officer of the Privy Council (London, 1870), Mr (Sir John) Simon, writing on the "alleged invaccinations of syphilis," practically denies the occurrence. Quoting from various sources, and from direct experimental investigations, he says,—"We are obliged to doubt whether vaccination (*i.e.*, genuine and simple inoculation with vaccine lymph), from however syphilitic a subject, can possibly communicate syphilis." The late Dr (Sir George) Buchanan, in the Report of the Medical Officer (for 1882) to the Local Government Board, says,—"Experimentally, indeed, Dr Cory has recently succeeded in communicating to himself syphilis with vaccine lymph unmixed with blood." In an Appendix to this Report a Committee appointed to investigate Dr Cory's experiments in vaccinating himself from syphilitic children state,—" . . . It is conclusively proved by Dr Cory's experiments that it is possible for syphilis to be communicated in vaccination from a vaccine vesicle on a syphilitic person, notwithstanding that the operation be performed with the utmost care to avoid the admixture of blood." "It is to be remarked that the infants from whom Dr Cory took lymph for his personal vaccination were, in all cases but one, not suffering from hereditary syphilis in a *latent* form, but were infants in whom *active* symptoms were unmistakably present, as shown by cutaneous eruptions, snuffles, mucous tubercles, and ulcerations." "Moreover, out of the four children thus used, only one was proved to have been capable of imparting syphilis by the lymph taken from its vaccine vesicle."

Henoch,[1] in discussing the value of breast milk for syphilitic children, says—"In my opinion the physician is bound to inform the wet-nurse, when giving her a syphilitic child to nurse, of the possibility of infection." He adds, "The matter, however, is not so bad as it seems; for nurses nearly all respond to the offer, and in the majority of cases they remain free from syphilitic infection. At least, I personally have as yet had *no* opportunity of observing a nurse suffering from infection acquired in this manner, although many of the nurslings were in a high degree congenitally syphilitic."

In further support of the non-contagious view, I will just mention two other well-known facts. First, the subjects of this inherited disease, when adequately exposed to the contagion of ordinary chancre syphilis, become infected, and manifest the usual train of symptoms. Second, the subjects of this inherited disease cannot transmit their disease to their descendants. Personally I have never met with a single exception to this rule.

Now, while my own experience does not supply me with any cases of syphilis propagated from inherited syphilis, I am nevertheless aware that many of our most distinguished syphilographers regard the inherited disease as highly contagious, and that in a relatively small number of cases chancre syphilis appears to be propagated from infants with inherited syphilis.

I will quote once again from Colles' work:[2]—"The readiness with which this disease is communicated by contact cannot be exceeded in this property by any other disease with which I am acquainted: I look upon it as equally infectious with the itch itself." In support of this statement Colles relates instances of wet-nurses and their families becoming infected by and from infants suffering from inherited syphilis. It was the extreme contagiousness of these syphilitic infants that led Colles to make the observations on which the so-called Colles' "law" now rests. He could not have formulated such a doctrine if he had had to rely on the clinical evidence at the disposal of the physicians and surgeons working at the children's hospitals at the present time. I will give his exact words (*op. cit.*, p. 304):—"The fact well deserving our attention is this: that a child born of a mother who is without any obvious venereal symptoms, and which, without being exposed to any infection subsequent to its birth, shows this disease when a few weeks old, this child will infect the most healthy nurse, whether she suckle it or merely handle and dress it; and yet this child is never known to infect its own mother, even though she suckle it while it has venereal ulcers of the lips and tongue." On page 285 he repeats this teaching in somewhat different words. He says: "The following fact appears to me very deserving of notice—I have never seen or heard of a single instance in which a syphilitic infant (although its mouth be ulcerated) suckled by its own mother, had produced ulceration of her breasts; whereas very few instances have occurred where a syphilitic infant had not infected a strange hired wet-nurse, and who had been previously in good health."

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[1] *Vorlesungen über Kinderkrankheiten*, pp. 101, 102. Berlin, 1881.

[2] *Op. cit.*, p. 290.

Since Colles' death this teaching has found wide if not general acceptance by surgeons,—has, indeed, been elevated into a dogma, and named Colles' "law." I am not conversant, however, with any facts or circumstances which in my judgment fully realise Colles' teaching as above given, viz., a syphilitic infant suckled by a healthy wet-nurse who becomes infected and infects her husband, nursed by the young members of her family, who also become infected, and, associating with, infect members of a neighbouring family, while the infant's own mother, who has also suckled the child and been brought into closest contact with it, *alone* and *invariably* escapes. Truly a startling contrast! Not merely an accident which occurred once in a way; for Colles says, "I have never seen or heard of a single instance" in which the infant infected its own mother!

Yet, after all, it is not so very strange that a mother should not be infected with disease from suckling and handling her own infant, which is really part of herself—an infant which owes to her its life and existence, its blood and its tissues, as well as any active or potential disease with which it may be born into the world. It is only when the same infant infects every other healthy person with whom it comes in contact, that the mother's invariable escape becomes so remarkable and striking. The importance of taking Colles' teaching as a whole cannot be overrated. For, obviously, some persons must be infected by the infant in order *to* *demonstrate beyond doubt that its disease is contagious.* In the instances where the mother alone suckles her diseased child and escapes infection, we lack the all-important demonstration that in the given cases the infant's disease is contagious. In the instances where a wet-nurse alone suckles a diseased nursling and succumbs to infection, we lack the demonstration, in the given cases, that the mother, too, would not have been equally infected had she nursed the infant. The double event alone realises Colles' teaching.

As will be evident from what precedes, Colles' experience of the contagiousness of inherited syphilis is totally at variance with my own. Yet my experience seems to tally with that of other workers among sick children in the children's hospitals of London at the present time. How is such a divergence of views to be explained, and how are such apparently opposed teachings to be reconciled? It is now, of course, quite impossible to verify Colles' cases. There appears to have been an enormous amount of syphilis about in Colles' time, and I incline to think that he got his cases of acquired and of inherited disease very much mixed up. In fact, I think that his infecting cases, or many of them, were infants that had become accidentally infected shortly after birth. Acquired syphilis to-day presents very much the characters which Colles described fifty or more years ago. Among children, when it occurs, syphilis is highly contagious now as then; contact syphilis is little changed either in its early or late manifestations. It is inherited syphilis alone that appears to have changed, when read in the light of Colles' description and then contrasted with the experience of present-day workers.

Perhaps the type of the inherited disease has radically changed in response to the more successful and more systematic treatment of constitutional syphilis, and to the later marriage of those who have suffered from the acquired form. Or did Colles restrict his use of the term inherited syphilis very much more than we do at present,—perhaps even only to such cases as really proved themselves contagious by actually infecting some person or other? A critical study of the clinical histories on which the diagnosis of inherited syphilis often rests at present, certainly brings out the fact that many physicians and surgeons are little exacting in either the quantity or quality of their evidence: thus, when a case yields to mercurial treatment, doubtful histories have been admitted as sufficient to justify that diagnosis. The mere fact that a child's father is or has been a sailor has many times been taken to prove the case. Over and over again miscarriages have been the chief or only evidence of a syphilitic taint, and have been considered confirmatory of the diagnosis of syphilis. Other equally unscientific methods of induction have been gravely put forward as evidence and proof of syphilis.

There is no doubt that the health of a father or mother, or both, is greatly deteriorated by syphilis; if at the time of procreation this disease is very active, the fœtus succumbs; if rather less active, the child may be born syphilitic and may then be contagious. In the majority of cases, however, though diseased, the child is not syphilitic, and therefore non-contagious. In former times struma and rickets were both regarded as outcomes of a wearing-out syphilis, and by some even to-day are still so regarded. Each is a condition which represents a lowered standard of constitutional power, rather than a disease in the proper sense of the term. "Inherited syphilis," so-called, may well be defined in a similar manner. My own belief is that syphilitic parents only rarely propagate a contagious disease in their offspring which survive. A great part of what is called "inherited syphilis" is a misnomer, in that it is not true syphilis, since it is not contagious. This disease should not be called "inherited syphilis," but rather "inherited from syphilis."

Summary and Conclusions.

1. The children of syphilitic parents very frequently show manifestations of a disease which is almost universally called "inherited syphilis."

2. In a large proportion of the cases this inherited disease is not syphilis at all, in that the disease is non-contagious, and would be better named "inherited from syphilis."

3. This inherited disease is true syphilis only if it conform to the ordinary tests which pertain to contact syphilis, and prove to be infectious and contagious.

4. The children of syphilitic parents occasionally inherit syphilis.

5. The mother suckling a child with such a disease may be infected by it.

6. A healthy wet-nurse and other persons brought into contact with such a child are even more liable to be infected by it than the mother.

7. Lymph taken from such a child, even although apparently well at the time, will probably, or possibly, invaccinate syphilis.

8. In reply to the question, Can a healthy woman give birth to a syphilitic child? the answer must be No.

9. Many women give birth to children who suffer from what is called "inherited syphilis" without themselves appearing to be infected. The explanation is obvious: this "inherited syphilis" is not syphilis in the true sense, and the mother's so-called *escape* depends on this fact.

10. There is no recent clinical evidence which fully realises Colles' teaching, viz., a mother suckling her own syphilitic infant and escaping an infection to which a healthy wet-nurse suckling the same infant and other members of her family, who have merely handled this infant, have succumbed, the latter facts being essential, if only to establish the contagiousness of the infant's disease in any and every given case asserted to be "inherited syphilis."

V.—TWENTY YEARS' EXPERIENCE OF MIDWIFERY PRACTICE, WITH SPECIAL REMARKS ON VAGINAL DOUCHING DURING THE PUERPERIUM.

By J. Stitt Thomson, M.D., F.R.C.P.E., F.R.C.S.E., Lincoln.

The medical journals of to-day teem with scientific papers, and each specialist has his own methods, his own cases, and his own successes to publish. How seldom are our failures reported. "Successful cases have a proneness for creeping into literature, which does not characterize fatal issues" (Thomas).

Under the overwhelming mass of scientific literature the work of the general practitioner is apt to be lost sight of. It is well, indeed, for our profession that we have our enthusiasts on special subjects. They do a great work, and the status of the medical calling is raised and maintained by their results, and from them the general practitioner learns much. Undoubtedly, specialism is the tendency of the age, but for years to come the practitioner will be in evidence, and will remain the trusted guide and comforter of the sick.

As a relief to the cumulative reports of special subjects may come a plain and simple narrative of twenty years' experience of midwifery practice.

This paper does not intend to be scientific, but it may contain hints to the younger man beginning work which may prove of more real service to him than an account of some recent monstrosity, some extraordinary mal-presentation, or some altogether abnormal pregnancy.

From 1875 to 1895 I practised in Dalkeith, and my experiences during those twenty years I now publish.

In the earlier years of work I attended many cases of labour—latterly not so many. The total amounted to over 2000. Naturally one met all kinds of cases—almost every mal-presentation that is possible; all the forms of hæmorrhage—accidental, avoidable, and unavoidable; many obstructions to an otherwise normal labour; puerperal eclampsia in its worst and mildest form; convulsions before, during, and after childbirth; twin births; cases of placenta prævia,—in fact, all sorts of abnormalities; and in the 2000 cases I have been fortunate enough to meet with *no maternal death.*

Parvin remarks that "The obstetrician has a graver responsibility than has either the medical or surgical practitioner, for he has charge of two lives instead of one." In Great Britain we regard the mother's life as of more value than that of the child, and I, holding this view most strongly, have never hesitated to sacrifice the child to save the mother; and perhaps partly to this am I now able to give an unbroken maternal record.

Statistics, it is true, are unreliable, and equally unsatisfactory; but it cannot be denied that no maternal death in twenty years' practice and 2000 cases is above the average.

Probably the subsequent remarks upon treatment will not be considered quite orthodox by many, but the fact remains that the results were satisfactory—and by results we judge most things.

It is to the treatment of ordinary cases of labour that I wish to draw attention, feeling sure that if such methods are carefully followed out we will hear of fewer deaths in confinement.

To be a successful obstetrician one must be patient—not interfering in normal cases. In cases requiring interference, however, the practitioner must have boldness without recklessness, rapidity without undue haste, confidence in his own powers without rashness begat by ignorance, and, above all, he must observe the strictest antiseptic principles. To this last point is due success more than to all the others. A nail-brush and an antiseptic are as necessary to the midwifery bag as the forceps and the chloroform.

I have witnessed with amazement the manner in which some medical men make examinations. Dirty hands taken from possibly dirtier pockets, sometimes smeared with rancid butter—often even this formality overlooked—and nails to which a nail-brush has apparently been a stranger for many days. These hands are employed to discover the condition of the internal parts. One is never surprised to learn that after such examinations good recoveries are not the rule, and to find the patient some days afterwards with local tendernesses, with septicæmic symptoms, and with a general condition causing grave alarm.

How could it be otherwise? If we treated our surgical cases thus, how many unions by first intention would we have? How many peritoneums could we open with the almost certainty of success?

In midwifery, above all other forms of practice, must the strictest cleanliness be observed, and the antiseptic theory adopted.

Baldy, writing of septic infection of the genital canal, states that "Puerperal septicæmia outweighs by far all other sources of septic trouble, and compared with this source the others are practically *nil.*"

The separation of the placenta leaves an open sore—a sore ever ready to absorb through its open-mouthed vessels the fatal germ; and to prevent such germ ever reaching this wound should be the great object of the obstetrician.

In all cases of labour, then, let the medical attendant, before making any examination, see that his hands are thoroughly washed with soap and hot water, and then disinfected. Having made the examination, and having satisfied himself as to the condition of parts, let no more examinations than are absolutely necessary be thought of.

Use of Forceps.—On an average I use either long or short forceps once in every five cases. With a well-dilated os, it is folly to wait for hours upon Nature to complete what can be brought to a close in as many minutes.

Remembering that the present-day woman has muscles but poorly developed, and that therefore the voluntary forces are feeble at the best, it has always appeared to me to be bad treatment to wait until the patient is worn out with pain and anxiety, when a little chloroform—wonderfully safe in such circumstances—and a very slight traction will give almost instantaneous relief. By early and judicious application of forceps much danger is averted to both mother and child. A prolonged labour is always more or less dangerous to the child, and is fruitful of trouble to the mother.

To apply forceps is not always an easy matter, and no force should be used, and if after introducing the blades the handles do not lock easily, it is wiser to withdraw the blades and reapply them than to force the handles together. I use the axis-traction for most cases, but if the head is well down the short instruments are more convenient and more readily applied.

Removal of Placenta.—This, the third stage of labour, is one of very great importance, and to its proper management is dependent success or failure. I think it was Dr Freeland Barbour who recently said that this stage was the most important and most full of anxiety. For my own part, however, I am always glad when the child is born, and have rarely had trouble with the after-coming placenta.

Many have been the measures advocated and taught for treating this stage, and even now discussions are constantly taking place on the subject. For some time Credé held sway, and the semi-delivered woman who fell into the hands of the blind followers of his method suffered accordingly. To "pull upon nothing" was the doctrine, and to drive everything out by external pressure. Rightly enough this method has been condemned by many eminent gynecologists. To suppose that parts congested and tender and ligaments already overstretched could come out of such an ordeal, as Credé advised, securely, was to expect too much, and malpositions (uterine) with all the attendant miseries were bound to follow.

To pull upon the cord alone—a method usually adopted by the ignorant midwife—was equally bad, as troubles would here also follow from a slight misplacement to a complete inversion. The method I always practise is the combination of pressure from above and gentle traction from below. Immediately after the birth of the child the fundus is grasped firmly and a steady pressure downwards begun. This is kept up for fifteen minutes, and then moderate traction on the cord, combined with the external pressure, generally removes the placenta without further trouble. My routine practice is to give ʒij. of ext. ergot. liq.

immediately after the birth of the child, and this seems to prevent hæmorrhage and lessen "after-pains" by causing the uterus to contract and thus expel both placenta and blood-clots. In my hands this treatment has proved useful, as I have never, in my practice, met with a really serious case of post-partum hæmorrhage. I never wait beyond fifteen minutes for the placenta to be naturally expelled.

Post-partum Vaginal Douching.—In England, perhaps more so than in Scotland, the usual routine practice of the nurse is to douche the vagina at least once a day after delivery for one week and even longer. Practitioners sanction this, and what is more wonderful, in many cases approve of it. That this is the case will hardly be denied. Students are taught it. In a handbook of midwifery recently published by one of our foremost modern school teachers in Edinburgh, the first point in the after-treatment of a labour case is put down thus—"Make attendant give antiseptic vaginal douche."

Given a patient having passed through a comparatively normal labour—forceps may or may not have been used—such a patient is never allowed, by me, to be douched.

The whole process of delivery is a natural one. There are no diseased parts, no infected sores, unless infected from without, and Nature provides, if left alone, against infection of the uterus by contraction and otherwise. Why, therefore, should we risk introducing septic germs by solutions very doubtfully antiseptic? Krœnig has shown that the vaginal secretion in normal pregnancy is free from pathological germs, and that it possesses a distinct germicidal power. He further contends that syringing the vagina with antiseptic solutions destroys its germicidal powers. Krœnig concludes that "prophylactic syringing should be given up even in pregnancy with gonorrhœal infection." Parvin is assuredly wrong when he advises as routine practice that "the nurse should use a warm vaginal injection of a 3 per cent. solution of carbolic acid, or a 1 to 3000 of corrosive sublimate."

In a normal case of labour we leave behind healthy, although abraded surfaces, and we leave the parts ready to heal. The uterine walls contract, the cavity diminishes, the vessels become sealed with healthy blood-clots, the cervix contracts, the vaginal walls approximate, and the parts are practically secure. If the external genitals are kept clean by frequent sponging with a solution of boric acid and dusted with boric powder, no infection will, in ordinary course, take place, and all will go well with the patient. If, on the other hand, we permit a nurse—who has often little belief in, and less knowledge of, antiseptic treatment of anything—to introduce instruments and wash out either the uterus or vagina with solutions of doubtful properties, we must expect bad results.

Would a surgeon, after an operation of importance, such as that of hernia, leave the first dressing to a nurse? a nurse, too, thoroughly trained and thoroughly capable. I fancy not. Such cases would be looked after by the surgeon himself, or at least left in the hands of a well-qualified assistant. Imagine an operator of an abdominal section allowing a half-trained, or even wholly-trained, nurse to open up the wound within six hours after operation and to wash the part with doubtful sponges and doubtful solutions.

Not less absurd is it for the obstetrician to allow his nurse to introduce a douche-nozzle into the vagina and to wash the parts within a few hours after delivery. Yet such is the common practice.

No wonder that from 1871 to 1894 at least 50,542 women died in England and Wales from puerperal fever.

I suppose that no one now believes that puerperal fever (septicæmia) ever arises *de novo.* It can only be introduced from without; and if the obstetrician will only take the same precautions as are now taken by the modern surgeon, puerperal septicæmia will become a thing of the past.

My personal experience teaches this, and if the young practitioner starting midwifery practice will attend to these points, he, too, may have an unbroken record for twenty years.

Part Second.

REVIEWS.

A Pictorial Atlas of Skin Diseases and Syphilitic Affections, in Photo-Lithochromes, from Models in the Museum of the Saint Louis Hospital, Paris. With Explanatory Woodcuts and Text by BESNIER, FOURNIER, HALLOPEAU, TENNESON, DU CASTEL, Physicians; FEULARD, Curator of the Museum, and JACQUET, Secretary. Edited and Annotated by J. J. PRINGLE, M.B., F.R.C.P., Assistant-Physician to, and Physician to the Department for Diseases of the Skin at the Middlesex Hospital. Part III. London: The Rebman Publishing Co., Limited: 1896.

THE contents of the third part of the beautiful Saint Louis *Atlas* are quite equal in interest and practical importance to the preceding ones, which have already been so favourably noticed in our pages. Two plates are devoted to tertiary syphilitic lesions. The first of these gives four typical representations of affections of the tongue, and in the accompanying letterpress from the eloquent pen of Fournier is traced out the manner in which the diseased process works. Thus two figures depict a superficial and a parenchymatous sclerosing glossitis; the others gummatous glossitis in its mucous and its deep variety respectively. A study of these, read in the light of Fournier's remarks, will be found to explain very clearly the several modes in which syphilis in its later period attacks the tongue, so as to render their subsequent recognition an easy matter. This, with respect to a more than possible confusion with cancerous and tubercular new formations, is of the highest consequence. The other syphilitic plate exhibits the ulceration due to the breaking-down of gummata which, arising deeply, have eventually reached the surface. The special significance of the particular case, admirably related by Feulard, consists in this, that the subject of it was unaware that he ever had syphilis, though this was proved by the history of his progeny, and the result of treatment. The third plate is peculiar and unique, for it shows a phase of dermatitis herpetiformis most closely resembling herpes iris; yet Hallopeau produces evidence strongly supporting his opinion. Some very instructive annotations have been subjoined by Pringle, which not only render the description more complete, but emphasize the anomalous character of this example. But of all the plates herein presented the fourth is, to our mind, the most educative. In this is delineated a case of disseminate epithelioma of the face, "sebaceous" in type at the outset. It is the sebaceous element which imparts the intrinsic interest, for in the two drawings given the whole life-history of the disease can be followed out, from the primary yellow greasy accretion to the deeply eroding ulcer which has excavated the side of the nose. A glance at this quite remarkable portrait will enable such a condition to be readily identified, and to be treated satisfactorily at an early stage. All that is known on the subject is epitomised in Besnier's remarks. A handsome portfolio to contain the fasciculi accompanies Part III. This at once preserves them from dust, and renders their consultation easier.

The Schott Methods of the Treatment of Chronic Diseases of the Heart, with an Account of the Nauheim Baths and of the Therapeutic Exercises. By W. Bezly Thorne, M.D., M.R.C.P. Second Edition. London: J. & A. Churchill: 1896.

The first edition of Dr Bezly Thorne's small book on *The Schott Methods of the Treatment of Chronic Diseases of the Heart* was favourably noticed in these columns last year. It speaks both for the popularity of the book and the Schott methods that a second edition should appear after so short an interval. No changes or additions of any kind have been made in this edition, and this must be a subject of regret. The methods have now been sufficiently proved to entitle them to be tried in all suitable cases, but evidence is not wanting to show that they are by no means so universally applicable as he claims them to be. We admire the clearness of his descriptions and the diagrams illustrating the resisted exercises, but we cannot agree with him in the value he places upon his cardiac outlines obtained by percussion. We would recommend him not to trust to auscultatory percussion in the way he seems to do; but let percussion be as perfect as it can be, the heart is not sufficiently definitely percussible to allow us to outline it with such accuracy as is maintained by him. Another serious defect in the book is the omission of any reference to the dangers or failures of the systems. It cannot be that Dr Thorne has not met with them or does not believe in them, for they have occurred in the experience of Leith, Herschell, and others. It would also have been advisable had he given us a bibliography of the literature upon the subject. He says that "happily the methods promise soon to become an acknowledged and accepted medical practice." While endorsing this hope, we at the same time emphasize their unsuitability and fallibility in many cases.

An American Text-Book of Obstetrics for Practitioners and Students. Richard C. Norris, M.D., Editor. London: The Rebman Publishing Company, Limited: 1896.

The medical profession in America may justly feel pride in this work, which has been written by a number of well-known obstetricians, including Drs C. W. Earle, H. J. Garrigues, Barton Cooke Hirst, Howard A. Kelly, and Theophilus Parvin, and edited by Dr Richard C. Norris. When we say that the illustrations constitute the most prominent feature of the work and its chief value, we do not thereby depreciate the letterpress, for the illustrations reach a very high standard both as regards number and excellence of execution. In this relation it is only fair to mention the name of Dr Robert L. Dickinson, the art editor, who must have spent an enormous amount of time in collating and adapting the drawings to a uniform scale. So numerous are these illustrations (nearly *nine hundred*) that it is no matter for wonder that we find some of them which can scarcely be regarded as necessary for the elucidation of the text; at the same time, most of them serve a distinct and useful purpose.

The arrangement of the sections of the work is good, if not at all original. The anatomy of the genitals is first studied; then pregnancy is considered, including its physiology, diagnosis, hygiene, and pathology; next in order comes labour, its physiology, mechanism, and pathology; then the puerperium, normal and pathological, is dealt with; a section specially devoted to the new-born infant follows; and it may here be noted with deep regret that the writer (Dr Washington Earle) was removed by death almost before his work was finished, and certainly before the book was published; and, finally, there is a full description of obstetric surgery, in which instrumental and manual operations and celotomy for sepsis are dealt with in turn.

Of course these sections are not all treated with equal power. The part devoted to Dystocia, occupying about 150 pages, is specially worthy of note; the illustrations of the various forms of pelvic deformity are excellent, and the fœtal causes of dystocia are given more fully than in any English text-book on obstetrics with which we are acquainted. Another excellent section is that on the pathology of the new-born infant. It is, however, unnecessary to enter further into the details of this thoroughly up-to-date text-book of the art and science of obstetrics. We can confidently predict for it a large sale on both sides of the Atlantic.

A Manual of Obstetrics. By A. F. A. KING, A.M., M.D., Professor of Obstetrics in the Columbian University, Washington, etc. Sixth Edition. London: Henry Kimpton: 1896.

PROF. KING'S Manual is now so well known that the appearance of a sixth edition calls only for a congratulatory note from the reviewer, who has recently been satiated with large co-operative treatises on midwifery from across the Atlantic. A large number of additional illustrations have been introduced into the work, which is quite worthy of the high place it has attained in the undergraduate mind. In an Appendix the author gives the report of the Committee on the Uniformity in Obstetrical Nomenclature, of which he himself was a member. It is a curious comment upon this that Dr King himself does not seem to have adopted the new nomenclature.

Our Growing Children, with special reference to the Physical Education of the Weakly. By GERARD SMITH, M.R.C.S. London: John Bale & Sons: 1896.

IN this little work Mr Smith explains to lay readers the causes of the various bodily deformities and defects which are apt to come on during school-life. He shows how they come about, and how they may with care be prevented or removed.

Such subjects as curvature of the spine, stooping and round shoulders, weak feet and legs, and eye-strain in school, are treated of among others, and there is an appendix on posture in cycling.

The book is meant for the instruction of parents and others who are responsible for the physical training of boys and girls in the common-sense rules by which they should be guided. It deserves a wide circulation, containing, as it does, a large amount of thoroughly sound advice clearly and sensibly expressed by one who evidently understands what he is writing about.

Diets for Infants and Children in Health and in Disease. By LOUIS STARR, M.D., Editor of the *American Text-book of the Diseases of Children.* Philadelphia: W. B. Saunders: 1896.

THIS useful little work divides itself into two parts. First, It contains seven sets of detachable diet slips on which accurate directions can be written for artificially-fed infants and for children in health. A, diet from birth to end of seven months; B, diet throughout the eighth and ninth month; C, diet for the tenth, eleventh, and twelfth month; D, from the twelfth to the eighteenth month; E, from the eighteenth month to two and a half years; F, from two and a half to three and a half years; and, G, diet in childhood. Secondly, It contains fourteen sets of slips for different diets required in various diseases, such as acute and chronic gastro-intestinal disorders, for constipation, scurvy, scarlatinal nephritis, rickets, tabes, phthisis, and chorea. Each slip can be added to or subtracted from at pleasure, and will certainly save the prescribing physician much trouble, and also prevent the mother or nurse from mistakes of memory. It is neatly got up, and the cases can be indexed on the counterfoils of the detachable slips like cheque-books.

A Manual of Pharmacology and Therapeutics. By WILLIAM MURRELL, M.D., F.R.C.P., Physician to, and Lecturer on Pharmacology and Therapeutics at, the Westminster Hospital, etc. London: Baillière, Tindall, & Cox: 1896.

THIS manual is one which is likely to become a favourite with students. It is written primarily for the requirements of students preparing for the Conjoint Board of the London Colleges, and is an abstract of the author's lectures delivered at the Westminster Hospital. It gives in concise form the leading pharmacological actions and therapeutic uses of the principal medicines of the British Pharmacopœia.

The book is by no means without errors. At page 373 Dr Murrell speaks of pilocarpine as a "liquid alkaloid like coniine and nicotine"—pilocarpine is a crystalline substance containing oxygen. The spelling of Guaiacum is generally wrong. Notwithstanding these and other inaccuracies, it is a manual which we have much pleasure in recommending to students. Dr Murrell is well known as a most distinguished pharmacologist and therapeutist.

A Dictionary of Treatment, or Therapeutic Index. By WILLIAM WHITLA, M.D. Third Edition. London: Henry Renshaw: 1896.

THE volume is dedicated to *Ian MacLaren*, in grateful acknowledgment of his portrait of the "loftiest and most sublime ideal of the life-work of a physician." The book is arranged as a therapeutic index. Under the heading of the different diseases or symptoms the appropriate treatment is discussed. At times the volume errs in giving rather a list of the drugs that have been used, however empirically, than an account of the rational treatment of disease. On the whole, however, the volume should be of great use to the busy medical man, enabling him rapidly to refresh his memory in the treatment of a given case. The medical part of the work is good, but the surgical technique is rather behind the times in some points.

A Practical Treatise on Materia Medica and Therapeutics, with special reference to the Clinical Application of Drugs. By JOHN V. SHOEMAKER, M.D., LL.D., Professor of Materia Medica, etc., College of Philadelphia. Third Edition. Thoroughly Revised. Philadelphia: The F. A. Davis Company: 1895.

WE had occasion to speak very favourably of the two previous editions, and we are glad to see that this most valuable work has reached a third edition. This edition includes all the newer medicines, as well as the treatment of disease by means of "animal extracts, secretions or juices, and immunized serum or antitoxines." It is a most valuable work of reference.

Braithwaite's Retrospect of Medicine. Vol. CXII., July to December 1895. London: Simpkin & Co., Limited.

THIS useful volume continues to give the general practitioner an abstract of the work done in the various branches of medical science and of surgery during the previous six months. The articles noticed are well selected and the abstracts ably made. The volume should keep up its deserved popularity.

The American Year-Book of Medicine and Surgery. Edited by GEORGE M. GOULD, M.D. London: The Rebman Publishing Co., Limited: 1896.

THIS huge volume is published to give physicians, in *compact* form, an annual epitome of new and progressive medical truths. The one objection to the volume is its size; to its contents none can be taken. Epitomes are given of a vast number of the best articles in the different branches of medicine and science. The abstracts are well done, and the volume is freely illustrated with plates and figures. A copious index makes the information easy of access.

Hypnotism, Mesmerism, and the New Witchcraft. By ERNEST HART. A New Edition, Enlarged. London: Smith, Elder, & Co.: 1896.

WE have already noticed this book. The title has evidently drawn, and a new edition has been called for. The enlargement consists of a reprint of "The Eternal Gullible" from the *Century Illustrated Monthly Magazine*; Notes on Automatic Writing, Exit Europia, and the Hypnotism of Trilby, from the *British Medical Journal.*

There is little new in the book on which to comment. Mr Hart's views on the subject of hypnotism are well known; he will have none of it, and perhaps he is right. Holding these views, however, we are somewhat surprised to find that he thinks that in Trilby, as written by Mr Du Maurier, "he has not outstepped the bounds of possibility."

Report on the Sanitary Condition of Scarborough for 1895. By HERBERT LITTLEJOHN, M.B., etc., Medical Officer of Health.

THIS is the first Report presented to the Town Council of Scarborough by Dr Littlejohn, who in his covering letter states "that, as his predecessor in office only demitted office in the latter part of the year under review, any credit arising from improved sanitary conditions is naturally due to him."

The Report is a good one, terse, and to the point, dealing with the births, deaths, and marriages which occurred in the borough during 1895. The birth-rate was 26·3 per 1000, the marriage-rate 19 persons per 1000 (or 9·5 marriages), and the death-rate 20·31 per 1000 of the population as estimated. It may be noted Dr Littlejohn deducts the deaths of 17 visitors in computing the last of the above events, but, as far as we can see, allows nothing for any inhabitant of Scarborough who happened to die outwith it during the year.

Among the zymotics typhoid fever stood high, 109 cases of the disease being notified, with a total of 18 deaths, half of these latter occurring in one of the six districts.

Dr Littlejohn also reports as to the necessity of a new infectious hospital, on slaughter-houses, meat inspection, etc.

To the Report of the Medical Officer of Health that of the Sanitary Inspector is added, from which it is seen that much good work has been overtaken by this department.

The only point we should desire to have improved would be the more full heading to some of the Tables which are embodied throughout the Report.

Part Third.

MEETINGS OF SOCIETIES.

MEDICO-CHIRURGICAL SOCIETY OF EDINBURGH.

SESSION LXXIV.—MEETING VII.

Wednesday, March 4, 1896.—Dr ARGYLL ROBERTSON, *President, in the Chair.*

I.—ELECTION OF MEMBERS.

The following gentlemen were elected members of the Society:—Harvey Rainy, M.B. C.M., 25 George Square; William Alexander Mackintosh, M.B. C.M., 13 Abercromby Place, Stirling.

II.—EXHIBITION OF PATIENTS.

1. *Dr Michael Dewar* showed a case of DIPHTHERIA treated by antitoxin, which, he said, he brought before the Society not because it was a case of diphtheria treated with antitoxin serum, but rather because it had been diagnosed at first as one of croupous laryngitis. The child was *in articulo mortis* when the serum was introduced, and it might be said that the true nature of the disease was discovered by the treatment. He would not trouble them with all the details of the case at this time, but simply state the main facts as they occurred. On the evening of the 31st December last the patient was taken ill with a slight croupy cough, but was quite well otherwise, and running about the room. He was sent for to see him on the evening of the 1st January, *i.e.*, the next evening, and, after examination, made the diagnosis as he had stated, and put him to bed on biniodide treatment; applied poultices to neck and upper part of chest, and had the air of the room kept moist with the steamer. He was taking milk freely. He was in much the same condition during the next day, and had passed a fairly good night; but on the forenoon of the 3rd January the child was very much worse. He exchanged small doses of calomel for the biniodide every hour, and continued poultices and steam, and gave brandy and milk. He suggested a consultation. Dr Affleck was accordingly invited to see the case on the afternoon of the 3rd. However, he was not able to come till 9 o'clock the same evening, and at that time he concurred with Dr Dewar that it would be utterly hopeless to attempt tracheotomy or intubation, as the child was in a state of collapse. He was quite cyanosed, at times unconscious, almost pulseless, and without corneal reflex. After Dr Affleck had left the house, and while waiting for a little while to see the end, it occurred to him that the case might be one of diphtheria. Acting on the impulse, he went immediately for his syringe, and obtained a supply of British Institute serum from Duncan & Flockhart. At 10.30 P.M. he injected 10 c. c. underneath the skin of the abdomen. Next morning the child was still alive, and at 11 A.M. he injected another 8 c. c., with the result that from that time onward improvement set in and continued, till on the tenth day he was convalescent, with the exception, perhaps, of a little swelling of the submaxillary glands. He was now in good health, and a fair specimen of sturdy childhood.

2. *Dr James Carmichael* showed a boy, aged 9, suffering from CHRONIC PERITONITIS. The disease was steadily undergoing process of cure, as could be readily observed. He was admitted on Dec. 17, and had been nearly two and a half months in hospital. On admission his weight was 43 lbs., and now it was 49½ lbs. When admitted he had an extremely tubercular look, quite different from his present appearance. The abdomen was markedly distended, extremely tense, and difficult to palpate. They discovered the usual signs

met with in such cases. There was a small amount of fluid in the peritoneal cavity. The exudate was chiefly of a solid nature, and he would just try to illustrate on the blackboard what they found. There were two large nodular masses and a number of smaller ones. It was quite evident that the omentum and bowels were pretty well matted together with solid exudate. The question of surgical interference arose, but they kept him under observation for a short time, and he appeared to improve so rapidly that he (Dr Carmichael) did not think it necessary even to ask his friend Mr Bell to come and see the case. The boy was kept in bed for about six weeks, and had improved very much indeed, both in regard to general health and local condition. The abdomen was now not much distended, and was easily palpable, and there was no fluctuation. These cases of chronic peritonitis were of extreme interest, because of late years there was no disease in the treatment of which greater progress had been made, mainly on surgical lines. They now knew that many of them were greatly benefited by surgical treatment. Simply incising the abdomen and relieving tension, even although there were no great amount of fluid present, was quite enough to initiate a cure of the disease by stimulating absorption. He was old enough to have seen a great number of these cases both in hospital and private practice. He noticed the swing of the pendulum was going perhaps too far in the opposite direction. He had heard young practitioners say that they believed every case of this kind should be treated surgically. One object he had in showing this case was to prove what he had been fully convinced of himself, viz., that these cases, just like every other case, must be judged each on its own individual merits. Although he considered many of them were the better of surgical treatment, a large number did perfectly well without it. Extreme tension, whether from fluid or not, was an indication for surgical treatment; but in a case like this, where there was little fluid, and the tension was not great, there was no urgency for surgical interference. The temperature was slightly pyrexial at first, but for the last six or seven weeks had been normal. He did not think surgical treatment was in any way indicated, because such cases as this recovered, in his experience, probably within a couple of years, but required great care and attention to general and local treatment. As to local treatment he had something to say, because, taking a hint from the surgeons, he had lately treated four cases, two in hospital, and two outside, with constant massage of the abdomen. He did not know how the surgeons explained the effect of simple incision into the peritoneal cavity when there was no fluid to evacuate, or, at all events, very little. He supposed that in some way or other it stimulated absorption. No doubt incision was a most powerful and useful remedy, but there were other means of stimulating absorption without exposing the patient to the risk of a surgical operation, however slight. Another interesting point was the localisation of tubercular disease. How was tubercular disease localised in the abdomen so frequently? In this case all the other organs were quite healthy. Post-mortem examination in such cases frequently revealed extensive tuberculosis entirely localised to the abdomen.

3. *Mr Joseph Bell* said that by the kindness of the President he was at liberty to show a case which was not on the billet. It was one of considerable rarity, viz., that of a little boy, 5 years old, with CONGENITAL DISLOCATION OF BOTH HIPS. Most of them had seen cases; he himself had seen three or four. He wished to show this case, chiefly from the fact that the patient walked better than such patients usually did, and did not present the remarkable lordosis in which the sacral and lower lumbar vertebræ lay almost horizontal. He walked fairly well, and bent his knees fairly well as he walked. Mr Cathcart was kindly going to make a cast for the Museum of the College of Surgeons. These cases were accounted for in three ways:—(1.) It was held that they were damaged at birth; in certain breech cases damage was supposed to occur. (2.) That they arose from muscular spasm *in utero* drawing the bones out of joint. (3.) From imperfect development of acetabulum. He thought the last was the most likely. Dr Leith, however, would tell them. They would notice the way in which the pelvis was slung between the hips like a carriage on C-springs.

Dr Leith said he had lately shown to the Society a pelvis with femora attached, illustrating the condition.

4. *Dr Adamson* showed, for *Dr Burn Murdoch*, a case of PATENT DUCTUS ARTERIOSUS. The patient was a boy, 8 years old, who had an attack of rheumatism three years ago. Since then he had not been so well, and was brought to hospital for treatment. There was considerable precordial pulsation, as the members of the Society could see; but he hardly suffered at all, and there was very little dyspnœa. There was no cyanosis or clubbing of fingers, and yet he thought it extremely probable that it was a case of congenital heart disease, complicated by endocarditis acquired afterwards from rheumatism. Dr George Balfour gave them the benefit of his advice, and diagnosed patent ductus arteriosus. He should like to have heard from Dr Burn Murdoch Dr Balfour's grounds. He thought it was from a thrill felt very distinctly in the second interspace. Dr Balfour considered that pretty characteristic of this affection. He (Dr Adamson) was very glad to hear something definite regarding the diagnosis of congenital heart disease. He had turned up the article in *Quain's Dictionary*, and still found midnight darkness. There were no physical signs or symptoms by which they could make out the exact lesion in congenital heart cases. In some of the most deformed hearts they had no murmur at all, in others they had the loudest murmur, with small abnormality. He was very sorry Dr Burn Murdoch

was not present, as he had come very specially to hear what he had to say. Certainly the curious feature in this case was the absence of cyanosis and of clubbing of fingers; but there was little doubt of its being congenital heart disease.

III. EXHIBITION OF SPECIMENS.

1. *Mr Stiles* showed specimens of Prof. Tavel's ANTI-DIPHTHERITIC SERUM, with Beck's SYRINGE for injecting it. He said he thought he might be pardoned for bringing this antitoxin before the Society. He did so partly because he knew the gentleman who was responsible for it, and the institution where it was produced, and he hoped he would not be accused of trying to advertise his friend if he showed it. His friend's name was sufficient to exonerate him (Mr Stiles). He was Professor of Bacteriology in the University of Berne, and he had been authorized within the last few months to prepare a diphtheritic antitoxin for the State of Berne, and his investigations had been under the control of the State. A little while back he told him (Mr Stiles) that he had now got a considerable quantity of this material, had been using it for several months, and had found it very efficacious. It was only a day or two ago that Mr Stiles was talking to a British scientist on this matter, who said he did not think the British antitoxins in the market were always to be relied on. Mr Stiles was much struck with the way in which this antitoxin was preserved and sent out, and its admirable fitness for export. Most were sent out in corked phials, and therefore this was no guarantee that the serum would remain aseptic; but this serum was put into a cylindrical tube which was drawn out and sealed at both ends. Before it was sealed it was placed in an incubator for twenty-four hours. It was guaranteed aseptic. The tube was almost entirely filled with the serum, so that there was no oxygen to decompose it. It was very strong,—so strong that 1 c. c. contained from 100 to 200 antitoxin units, and 200 units, he believed, was the strongest anti-diphtheritic serum yet prepared. In the next place, the readiness and safety with which this could be made was remarkable. The mode of injection was as follows:—The drawn-out cylinder was first held vertical, then broken off and fitted on to a needle mounted on a bit of vulcanite, which again was soldered on to a bit of indiarubber tubing, and this was passed into the subcutaneous tissue. The serum was so potent that he believed $\frac{1}{1000}$ or $\frac{1}{2000}$ c. c. was sufficient to neutralise a lethal dose in an average-sized individual. Tavel recommended that it should be used as a preventive in cases exposed to infection. One hundred to 500 units injected would, he held, create immunity for from two to four weeks. For an adult he recommended 1000 units, *i.e.*, 10 c. c. He maintained that if the symptoms had not very materially subsided in the course of two or three days, another dose should be injected. Since receiving

this he (Mr Stiles) had put the matter in the hands of a chemist who, he believed, had got the agency, and was told by him the other day that he had now got a good supply, viz., Mr Stewart, No. 1 Lynedoch Place. It could be injected with an ordinary syringe. Prof. Tavel hoped soon to be able to supply an anti-tetanin.

2. *Mr Caird* showed a specimen of PERFORATION OF STOMACH, which, he said, illustrated a failure in surgery, but was very instructive. The patient was admitted to Mr Chiene's ward suffering from symptoms of dyspepsia without any vomiting. The diagnosis was obscure. There was pain in epigastric region, but nothing was felt on palpation. He was in the ward for a few days. Then they concluded that probably he had carcinoma of pylorus, and one morning at 5 A.M. he awoke crying out with pain. Obviously perforation had occurred. He appeared moribund, with cold extremities, shrivelled fingers, sunken eyes; as usual in such cases mentally clear. Temperature was 95°, and pulse felt with great difficulty. Laparotomy seemed out of the question. They contented themselves with transfusing about 15 ozs. of saline solution into the veins of the arm, with the result that in two or three hours the temperature had risen to normal and the pulse was rather stronger, and accordingly they opened in the middle line. The peritoneal sac contained tea, and various articles of food. On pushing the omentum to one side they found a large aperture towards the pylorus, through which fluid was gushing. The first thing done was to seize the tube of the irrigator, and insert that into the aperture, and thus the fluid was being syphoned out of the stomach, while at the same time they enlarged the incision and rinsed out the abdomen with sterilised fluid. By the time they got the abdomen tolerably free nothing was coming from the stomach. The question was, what was to be done with the perforation. It was impossible to suture. Every time they put in a stitch it cut its way out of the infiltrated tissue. They put an indiarubber tube right into the stomach, and then attempted gastrostomy after the method of Witzel, by which they hoped to shut off the whole aperture, making it continuous with the abdominal wall. But the difficulty here again consisted in the fact that the carcinoma lay at this point. One was tempted to resect the mass, which the condition of the patient hardly permitted. They did what they could to stitch the stomach, then seized the duodenum and stitched it across, and thus managed to make a pretty fair false œsophagus. There was no proper road through the pylorus. Mr Caird was not clear that he had stitched up the duodenum; he took whatever lay in the vicinity. They next did a gastro-enterostomy with Murphy's button. During the operation the house-surgeon transfused 10 or 15 ozs. of saline solution. The patient awoke perfectly com-

fortable; all his pain had departed. He went on fairly well, but his pulse was not as it should be. At night they began feeding him, and every time they fed him the pulse got stronger and better, and they left him at night feeling certain they had pulled him through. There was no sign of septic absorption; temperature was normal, and the pulse could be counted. In the evening he was again seized with symptoms of perforation. The tube had been passed through diseased tissue, which was devoid of elastic spring, and consequently had not grasped the tube tight enough. Food would therefore escape from stomach into the peritoneal sac. It would have been better to have taken omentum and stitched it around the tube more accurately to the peritoneal surface. The event proved the truth of this, for he died on the following morning about nine or ten o'clock, and the sectio showed a fresh extravasation. In the specimen they could see the condition of the gastrostomy. They saw how very efficient Murphy's button had been. If greater care and time had been expended on the operation, and if perhaps before they fed him they had again washed out the stomach and got rid of irritating material, the result might have been very different from what unfortunately it turned out. The case served to suggest that in certain cases of perforation due to gastric ulcer, an excellent result might be gained by converting the lesion at once into a Witzel's gastrostomy and washing out the peritoneum and the stomach.

IV.—Exhibition of Photographs.

Dr Gibson said he wished to show two Photographs from cases of PARALYSIS OF OCULAR MUSCLES. They were both patients in the Deaconess Hospital—one present, the other past. The latter, a child of eleven months, was in for three days. It was difficult to get any connected history. The only thing was total paralysis of the third nerve of right eye. Death occurred two days after admission, and a post-mortem revealed hæmorrhage and neuritis of third nerve. The other case was at present under observation for tertiary syphilis. There was paresis of the whole of the muscles supplied by the third nerve of left eye. He thought at first that it was probably due to a gumma; but as there was rapid improvement under large doses of iodide, he now thought it was probably a meningitis affecting the nerve and passing away, although he admitted that a gumma often seemed, under the influence of this drug, to melt away like snow in sunshine.

V.—Original Communications.

1. *Dr James* read his paper on THE BLOOD IN DIABETES MELLITUS.

The President said he would be glad to hear any remarks on the condition of the blood in diabetes, and the theory which Dr James had evolved from that condition.

Dr Gibson said he thought this most ingenious paper of Dr

James's must not be allowed to pass without an expression of admiration for the unusual combination of philosophy and physiology which Dr James always managed to introduce into any piece of work he brought before them. This paper recalled to his mind a short paper which had been published in the *Lancet* last year by himself on the Increase of the Blood Corpuscles in Congenital Heart Disease. The fact was well known before, but in no work was the increase accounted for, or even attempted to be explained. He had undertaken to say it was a compensatory process. But Nature never compensated with direct intention. It was probably brought about thus: on account of the retardation in the blood current the blood corpuscles had less work to do, less oxygen to carry, less wear and tear; consequently they lived longer, and increased in number until equilibrium was brought about. This paper of Dr James's seemed to run on parallel lines; but the last observation had completely cut the ground from below his own feet if it were attempted to make the two things go on all fours. He would rather be inclined to think that the cases of greatest increase were just the cases in which the machinery was running down most rapidly. There was just one question he would like to put to Dr James,—What was the number of white blood corpuscles? Unless they had the relation of the leucocytes to the hæmocytes, he did not think they were in a position to discuss the relationship of the red corpuscles to diabetes.

Dr Noël Paton said he had some diffidence in discussing this paper, because he had not made personal observations on the blood in diabetes. He had, however, made observations on the blood in other disorders. If his remarks were of the nature of destructive criticism he knew Dr James would not mind that, because they were good enough friends. In the first place, the clinical methods used in the enumeration of the corpuscles, estimation of the hæmoglobin and of specific gravity, were not quite satisfactory, especially if left in the hands of resident physicians; and for that reason one had always a certain doubt in accepting even enumerations of corpuscles. In regard to the number of red blood corpuscles, the differences were so manifest and so marked, that the idea of their being due to errors in method must be entirely dismissed. In cases of diabetes enormous variations are found. As Dr James pointed out, various authorities had described this. In some cases there was more concentration of blood; in other cases a smaller number of corpuscles. For estimation of hæmoglobin, he supposed Gowers's hæmoglobinometer was used. One knew how apt it was to go wrong in the wards of the Infirmary. Unless the same instrument was used and tested continually throughout the series, he thought they must doubt the results as to the hæmoglobin present. Then as to specific gravity, there again they had the same difficulty. He had not worked at this himself, but the late Dr John Balfour had used it a good deal in their laboratory, employing the same methods, and they found that unless they continually tested the solutions they were using they could not depend on the results. He did not know whether the solutions were tested in the ward with the pycnometer. The results of investigators showed that the specific gravity of the blood was in direct proportion to the number of red blood corpuscles. He thought the work of Sherrington and others had pretty clearly shown this. The amount of red corpuscles was so enormous as compared with the amount of proteids and amount of solids of serum, that *it* was the determining factor with regard to specific gravity. To what were they to ascribe this great increase in the number of red corpuscles? Dr James put forward the view of the *vis medicatrix naturæ* increasing them to keep up the oxidising power. In his (Dr Paton's) opinion the simple abstraction of water would account for this, always admitting that specific gravity results were to be accepted with some caution. As von Noorden pointed out, it was very possible that in diabetes they might have, as result of production of oxybutyric acid and so on, increased lymph production, and increased withdrawal of water from blood; but how were they going to get increased production of corpuscles in diabetes? In that disease one of the sources of energy was not available, viz., the sugar, which was excreted. The organism must therefore depend for energy on proteids. Corpuscles were largely manufactured from proteids; and if they had an extra drain on proteids as a source of energy, how were they to get the amount of albumen required? He did not think that Dr James maintained that they had diminished destruction of corpuscles when they had increased oxidation. There was no evidence whatever that there was any increase of oxidation in the disease. On the contrary, they had evidence rather of diminished oxidation. If the proteids were used up, where were the proteids to come from for the hæmoglobin, which contained 96 per cent. of proteids? They had also to provide all the energy of the animal. He must say he could not see how Dr James was going to work in the theory of the *vis medicatrix naturæ* increasing the corpuscles, nor did he think he had demonstrated that it was due to anything more than either increased excretion of water or formation of lymph.

Dr Leith said he confessed his position was largely Dr Paton's with regard to the hæmoglobinometer. He had had opportunities of watching different observers with the instrument, and no two individuals decided on the same colour. He thought the hæmoglobinometer almost useless. In diabetes there was a daily drain of water, and therefore an increased density of the blood, brought about by the long-continued drain. As for Dr James's experiments on patients in the way of food and drink, there was a daily drain of water, and therefore an increased density of the blood, brought about by the daily drain for a long time; and he only made one observation on the food and drink, not a continuous observation extending over several days. This was a single dilution which might reduce it in some cases for a morning. (Dr James: Certainly not. The water was running away as fast as we put it in.) Dr James's use of the term *vis medicatrix naturæ* was one with which he (Dr Leith) was not familiar. The pathologists had only experience of it in the return to a normal condition seen in the repair of damaged tissue. He was at a loss to understand how in this present case it could be brought about by physiological means.

Dr Foulis said he would just like to refer to one other point in the way of criticism. When Dr James described so graphically how one patient drank a whole large syphon of potash water, he supposed he overlooked the fact that each syphon contained about 20 grs. of bicarbonate of potash. That might account for the statement that the specific gravity was not in any way altered. Would the addition of 20 grs. not counterbalance the tendency to lowered specific gravity?

Dr James said that he did not think 20 grs. would have any apparent effect on the specific gravity.

Dr Craig said he suspected that there were not 20 grs. in a syphon. He had the highest authority—viz., Duncan & Flockhart and others—for saying that there were none of the potash waters sold with anything like the amount that the Pharmacopœia allowed.

Dr James, in reply, said that he had wished to elicit criticism, and he had got it. With regard to the condition of the blood in heart disease, Bright's disease, etc., observations had been made. Lichtenstein and others had referred to the condition in heart disease. There was straining through the tissues, and concentration. As regards the white corpuscles, he (Dr James) had measured them too, but did not put them down, as he was not sure of the result being very accurate. With reference to Dr Paton's remarks, he came to something more serious. They were all acquainted with the fact that the hæmocytometer and hæmoglobinometer and specific gravity apparatus did not give exact results, but they made these results as exact as they possibly could. There were, of course, chances of error; but the fact that the investigation had been made with the same apparatus and by the same man, who was thoroughly well up to his work, reduced that to a minimum. But the term *vis medicatrix naturæ* seemed to have acted as an irritant to their friends Dr Paton and Dr Leith. He had used this term advisedly, because some of their scientific explanations acted somewhat as an irritant upon him. There were many things that science could not explain. Why was it that in diabetics the digestive power was increased? In many diabetics, before the diabetes began, the digestive power was not so good, but afterwards it improved. A healthy man, or Dr Paton himself, he might venture to say, could not eat, digest, and enjoy anything like the quantity of food which a diabetic almost invariably can do. But let a healthy man fall into bad health and become a diabetic, his appetite will become greater, and his digestive power increased. Owing to the waste caused by the glycosuria, more food has to be taken into the body, and digested. Accordingly stomach, liver, pancreas, etc., are called upon to do more work, and they respond to the call. This is the *vis medicatrix naturæ*. So, too, he held the blood was called upon for extra work, and it responded.

2. *Dr W. G. Sym* read a paper on OPHTHALMIA NEONATORUM, ESPECIALLY IN REGARD TO ITS PREVENTION, which appeared at page 1004 of this Journal.

The President said he was sure all present must have listened with much interest to the paper Dr Sym had given them upon a disease capable of producing irretrievable mischief, ending in blindness of a large portion of the community. At the same time, he was inclined to think that the statistics alluded to in Dr Sym's paper referred to a time gone by to a certain extent. He did not think that recent statistics would bring out the same proportion. Much more attention had been directed to the subject in recent years. Judging from his own personal experience, he was inclined to say that cases were much less frequent now than formerly. One had only to think of the number of cases brought to the eye dispensary or the eye wards of the Infirmary thirty or thirty-five years ago to be struck with the fact that the proportion that came now was very much smaller, less than one to five of those brought formerly. He thought this condition was rectifying itself. The main point was to have attention drawn to the danger of the disease, so that suitable treatment might be adopted; and the chief difficulty, as Dr Sym had said, was that a large proportion of cases, chiefly in England, were attended by midwives, not practitioners; and midwives were not aware of the great danger. What was specially needed was the better instruction of midwives; there was no question of that. With careful treatment this disease should be eradicated, if suitable prophylactic measures were taken. With regard to treatment, which Dr Sym had glanced at, that was generally recognised as correct, and all medical practitioners were aware of it; but the great point was to see that the midwives were made fully aware of the necessity for professional advice. Government had been appealed to by the Ophthalmological Society of the United Kingdom with regard to this matter,—viz., such a notice as Dr Sym mentioned. It was hoped that such notice might be distributed to all concerned through the registrars of births, deaths, and marriages; but it was found that this would add so much to the duties of registrars, and the consequent expense would be so great, that the scheme fell through,—the Government could not undertake it.

Mr Joseph Bell said that papers which did not excite discussion were almost sure to be correct in every part. He was gratified by the extreme brevity and carefulness with which the statistics had been presented. The great thing the teacher could do was to be constantly repeating things; and they must constantly repeat to the public that midwives must be taught to get rid of this malady. It just required to be attended to.

Dr Sym, in reply, said he could tell them the exact percentage occurring at the present time among hospital patients. It was ·37 per cent. for the last 6000 cases in the Royal Infirmary, Edinburgh. In Leith he found the proportion in 3000 cases to be exactly double that,—·7 per cent. But any one who looked into a hospital in an English town such as Manchester would find twenty or thirty cases in a day of ophthalmia neonatorum.

ROYAL MEDICAL SOCIETY.

Feb. 21.—Dr Macrae Taylor in the Chair.

Dr Joseph E. Bowes showed a specimen of Gangrene of the Lung, and described the case. The patient was a servant girl, aged 23. While lighting a fire about 6 A.M. she began to cough, and brought up several ounces of blood. She had had no hæmoptysis before, but had been treated for enlarged glands in the neck. Two had been excised on the right side. She was sent into hospital about 11 A.M. as an ordinary case of hæmoptysis. Her temperature on admission was 102°, and pulse-rate 86. The sputum was bright red, mixed with fragments of a chocolate-brown colour. On microscopic examination he found in it hæmin and hæmatoidin crystals, as well as red blood-corpuscles; on the first occasion nothing else. At 11.30 P.M. he was called, and found a temperature of 106°·4. She was very pale, and with livid lips. Under antipyretics the temperature came down, and next morning it was 102°. She was still spitting a mixture of fresh and old blood, and on this, the second day, she had two rigors, and then her temperature rose to 106°. He examined the sputum, and found elastic tissue, and also some oil globules, which, he judged, came from the milk she was taking. He found in the right mammary region, between second and fourth ribs, an area dull to percussion, and presenting crepitations and very harsh breathing, but no bronchial breathing. On more thorough examination he found the extreme apex above the clavicles, and down to the second rib very little changed to percussion and auscultation; no crepitation, breathing harsh, and expiration prolonged. On Saturday morning, the third day, he found that consolidation of the lung had spread down below fifth rib, nearly the whole front of the lung, except the extreme edge, being involved. In the morning the temperature was 97°; at 12 it was 98°; at 4, 104°. She was getting 5 grs. of quinine every four hours, and creasote internally. The temperature on Saturday and Sunday did not rise above 104° until Sunday night, when she had another rigor, and it went up to 105°·6. It oscillated up and down, being sometimes normal; several rigors occurred, and hæmoptysis still persisted. He examined the sputum several times, and found elastic tissue and oil globules. He gave bread and rice, but could find no starch granules in sputum thereafter. She had a fresh hæmoptysis on Tuesday about 1.45, and died at 2.15 P.M. They concluded that she had gangrenous pneumonia, and probably some perforation from some other cavity into the lung. There was a little diarrhœa. For a day or two before admission she had been coughing up what she described as gritty stuff, probably broken-down bronchial glands, as had been shown post-mortem. Before death a cavity was on the Monday detected in third and fourth spaces near the sternum, presenting high-pitched, rather harsh, slightly amphoric breath sounds. Post-mortem examination revealed numerous enlarged bronchial glands extending down to the diaphragm, and some adherent to trachea and œsophagus. About 1½ inches above the bifurcation of the trachea there was an opening into the œsophagus, from which a septic sinus passed forward to right of trachea, and led into a cavity of the size of a walnut, filled with altered blood and fœtid material, which extended forwards in front of right bronchus, and opened by a small hole into one of the primary divisions of the right bronchus. The œsophageal opening seemed to be the older of the two. On microscopic examination, he found numerous micrococci and bacilli, but no tubercle bacilli. In the apex there were some broncho-pneumonic patches of about the size of pin-heads.

Mr Ballantyne and *Dr Martin* having spoken,

Dr Scot Skirving remarked that it was unlikely that the œsophageal opening could have arisen against gravity. Possibly it had been caused by some foreign body lodging there. Had there been any dysphagia previously?

Dr Bowes replied that there was no history of a foreign body having lodged in the œsophagus.

The Society then engaged in a debate on the motion, "That it is inadvisable for Women to enter the Medical Profession except for the purpose of becoming Medical Missionaries."

Mr W. T. Ritchie led for the affirmative. He threw into strong relief the argument from physical unfitness owing to menstruation, pregnancy, childbirth, and puerperium, and general instability of nervous system, and dwelt also on social objections to the existence of women doctors. The work was too arduous for them. Not that he regarded woman as inferior; only she failed to do herself justice in competing with man on his own ground; and, even if she chose to do so, there were other professions more suitable for her than medicine.

Mr N. P. Watt, in moving the negative, contended that too much was made of the physiological objections. The chief function of men and women was not to propagate the species, but to promote the welfare of their fellow-men and fellow-women. As for hard work, the nursing profession had its full share of it. Women, as well as men, were the better of having all their faculties exercised. Moreover, there was a distinct demand for female practitioners in the interests of certain classes of patients. It augured well for their professional efficiency that the average female medical student took a much keener interest in her work than the average male.

Mr T. A. Ross, in seconding for the affirmative, remarked that ideas of justice with regard to woman's sphere varied considerably. Experience was the criterion. Previously women had a fair field in medicine, and they had done nothing to advance it. Mr Ross quoted Euripides on their defects; but he admitted the advisability of teaching them gynæcology and midwifery.

Mr E. Bramwell seconded for the negative. He maintained a woman's right to judge for herself. There was a demand for women doctors. As for the cry that they would be unsexed, if a woman's womanliness was unable to bear the brunt, it was not much worth. The work of a doctor was no harder than that of a nurse.

Mr Prentice contended that the physical objections were trifling. As for the moral objection, that women would become unsexed, that applied also to nurses; but, from his experience of nurses, he should say they were by no means unsexed. (Laughter.) The modern novel was much more likely to unsex them than becoming doctors. He did not believe women were more gossipy than men. There was far more hysteria and nervous derangement among luxurious idle women than among the hard working, and for that matter women would be still harder worked as missionaries in India.

Dr Martin supported the affirmative.

Mr M'Nair Scott remarked that women of the northern stock had long shared closely in the pursuits of their brothers, and were no mere passive playthings. Up to the end of last century the best field for their activity was at home, but the growth of machinery had helped to throw them idle. He contended that by the practice of medicine they need lose no womanly grace, no fine feeling. On the contrary, all would be enhanced, and with a firmer fibre.

Mr Fletcher referred to the sentiment among students against the presence of women students at skin cliniques, etc. The cry for women in the profession came, not from the general mass of the laity, but from the "new woman."

Mr Belasco held that women ought in justice to be allowed the privilege of relieving the sufferings of humanity. They would probably strike out and pursue fruitful lines of thought that would never have occurred to men.

Mr Ballantyne referred to the lack of originality in women, *e.g.*, in musical composition, a sphere in which they might have been expected to shine.

Mr Struthers, in supporting the negative, cited midwifery as a suitable pursuit for women.

Dr Easterbrook said that women, being free agents, should be free to enter medicine in order to live.

Dr Skirving said that in India women doctors would not compete with men. Here they would intensify a competition already too keen.

Dr Maclean supported the negative.

Dr Macrae Taylor said it would be a pity if the Society gave a verdict against the admission of women to the profession, since the University had sanctioned it by throwing open to them its degree. Women had counted the cost. They entered other professions which involved as great a strain. Had they a right to prevent women?

Mr Harry Fowler said the question was not whether they had a right to prevent, but whether it was advisable.

Dr Giles remarked that the exception specified in the motion rather gave away the affirmative case as far as physical and mental fitness was concerned. The advisability depended on whether there was a genuine demand.

Messrs Watt and *Ritchie* replied.

On the question being put, there voted—Ayes, 16; noes, 13, giving a majority of three for the motion.

Part Fourth.

PERISCOPE.

PERISCOPE OF OBSTETRICS AND GYÆCOLOGY.

By J. W. Ballantyne, M.D., F.R.C.P.E., F.R.S.E.

A Case of Myoma Recti simulating an Ovarian Cyst.—Tumours occur more frequently in the rectum than in the other parts of the intestinal tract, and may be of the nature of hæmorroids, adenomata, papillomata, lymphomata, or (rarely) lipomata, teratomata, and diffuse angiomata. To this list must now be added myomatous growths, examples of which have been reported by Senn and Berg. Westermark of Stockholm now records a third instance of myoma recti which was of special gynæcological interest, because it simulated an ovarian cyst. The patient was a married woman, 49 years of age, who had twice been confined, the last occasion being twenty-three years ago. The menopause occurred at the age of 40, but lately there had been some irregular vaginal hæmorrhage, with pain. For a year and a half she had suffered from abdominal pain, difficulty in micturition, and an offensive discharge. A tumour as large as a man's head was found in the abdomen, extending down into the pelvis, behind and below the uterus, which was pushed upwards and forwards. The growth had an elastic pseudo-fluctuating feeling, and lay somewhat to the right of the middle line. The abdomen was opened, and was found to contain some reddish-brown free fluid. The tumour was found to be very soft, and burst during manipulation, leading to great hæmorrhage. By putting the patient in the Trendelenburg position, the deep-seated pedicle was exposed, and was ligatured. By this pedicle the growth was attached to the rectum, and by adhesions in its upper part to a coil of small intestine. An intestinal tear occurred during removal, which was sutured. The uterus, ovaries, and left tube were normal; the right tube was thickened, and was extirpated. The abdomen was washed out with normal salt solution and the wound closed, a tampon being left in the pouch of Douglas, lest perforation of the rectum should occur. The patient died from intestinal obstruction and fibrinous peritonitis on the fifth day. There was a gumma in the liver. The rectal tumour was found, on microscopic examination, to be a true myoma.—*Centralblatt für Gynäkologie*, Jan. 4, 1896.

Complete Rupture of the Uterus.—At a recent meeting of the Berlin Obstetrical Society, Dr Knorr showed a uterus which had ruptured spontaneously, the head of the infant remaining in the pelvic cavity. The patient was moribund when brought into hospital. After craniotomy and cranioclasm had been performed, the removal of the infant was still prevented by the large shoulders, so the clavicle was divided (cleidotomy). The infant weighed 9 lbs., and showed intra-uterine rigor mortis in a very marked manner.—*Centralblatt für Gynäkologie*, Jan. 11, 1896.

Ferripyrin, a New Hæmostatic for Obstetricians and Gynæcologists.—Dr O. Schaeffer speaks highly of ferripyrin in the following cases:—As a hæmostatic in all cases of genital bleeding, where a cauterizing action is not required, in the form of a 16 to 18 per cent. solution in water; as a hæmostatic and astringent for intra-uterine and vaginal douching, in the form of a 1 to 1½ per cent. solution; as a powder in cases of painful carcinoma; as solution for injection in hæmaturia; and by the mouth in cases of melæna neonatorum.—*Centralblatt für Gynäkologie*, Jan. 11, 1896.

Menstrual Precocity.—Dr Pujol Brull gives an account of a case of a girl who had, according to her mother's statement, menstruated regularly every month since she was four and a half years old. She was now eight years, and came under treatment for broncho-pneumonia. There was hair on the mons veneris, and the breasts resembled those of an adult woman both in size and as to the areola. The external genitals were fully developed; the internal, for obvious reasons, were not examined. The condition was regarded as a physiological monstrosity, for in Barcelona (where the case occurred) menstruation does not usually begin till between twelve and fourteen years. No treatment was recommended, but the mother was warned against permitting her daughter to become pregnant, as the undeveloped state of the osseous pelvis might cause danger in delivery.—*Archivos de Ginecopatia, Obstetricia y Pediatria* (*Barcelona*), Nov. 10, 1895.

Intra-uterine Puericulture.—Under this name Prof. A.

Pinard discourses upon the effects of the maternal surroundings during pregnancy upon the health and development of the infant. He has found that pregnant women who have been abandoned and have found a temporary home in one of the refuges which exist in Paris for their reception have given birth to better developed, stronger, and more healthy infants than have the mothers who have continued working up to the hour of confinement. The same good effect was obtained when the pregnant woman spent some time in the maternity dormitory prior to the onset of labour. Prof. Pinard has attempted to establish these facts in a more strictly scientific way by comparing the weight of the infants of these two groups of women, viz., those living in a refuge or in the maternity, and those continuing to work up to the onset of labour pains. The average weights in the former cases were 3290 grammes and 3366 grammes, whilst in the latter it was 3010 grammes. Further, the pregnancy was much more likely to go to the full term in the former than in the latter cases,—thus 66 per cent. of the pregnancies lasted over two hundred and eighty days in the former, compared with 48 per cent. in the latter. It seems fair to attribute these things to the care, quiet, rest, and good hygiene enjoyed by the women in the refuges and hospital.—*Annales de Gynécologie*, Dec. 1895.

SURGICAL PERISCOPE.

By Kenneth M. Douglas, M.D., F.R.C.S. Edin.

Castration for Prostatic Enlargement.—The results to be expected from this treatment, and the limitations of its efficacy, are discussed, so far as an analysis of recorded cases affords material for the purpose, by Prof. Bruns (*Mittheilungen aus den Grenzgebieten der Medicin u. Chirurgie*, Band i. Heft 1), and by M. Albarran in a communication to the French Surgical Congress, Oct. 1895 (*Annales des Maladies des Organes Génito-Urin.*, December 1895). Both authors regard the question in a twofold relation—First, as regards the result of the procedure upon the prostate; and, second, the result upon the bladder. With respect to the first point, while Bruns accepts the observations of Griffiths and White as affording proof of the resulting atrophy, which he finds noted in 83 per cent. of the cases, Albarran, on the contrary, though admitting that the change is clinically demonstrated, maintains that he has observed conditions such as these described by Griffiths in enlarged prostates where no castration had been done, and that we have as yet no conclusive anatomical proof of the atrophy of a hypertrophied prostate after castration. Clinically what has been observed has been an immediate and rapid change from subsidence of congestion and a slow and gradual diminution of the gland thereafter. Both writers find from their study of the cases that the effect upon the contractility of the bladder varies according to the nature of the case, and agree generally in the conclusions they derive. Cases presenting frequent micturition as a feature, without retention, are relieved as a rule (13 out of 18, Bruns; 12 out of 13, Albarran); cases with acute retention are promptly relieved, though Albarran questions how far the operation can be credited with the result; cases with chronic retention get most benefit when retention is of less than two years' standing, Bruns finding that of 28 such cases 22 dispensed with the catheter after operation, though residual urine was not wholly abolished, while of 20 cases of longer duration (two to seven years), 8 were enabled to dispense with the catheter. The broad conclusions seem to be that cases of frequent micturition and of acute retention may be treated by the ordinary means (Albarran), and that in chronic retention castration may be performed when catheterization is difficult, for though freedom from the instrument cannot be promised, yet it will probably be achieved, and at least there will be marked amelioration of the patient's condition, the prospect being better when the bladder-wall retains its power. Then, too, apart from any mechanical difficulty in catheterization, the constant danger of "catheter life" has to be remembered (Bruns). M. Albarran included in his analysis none but such as gave information in adequate detail—135, with 22 deaths. Prof. Bruns takes the records of 148 cases, to which 4 personal observations were added; he discussed the developmental and physiological facts upon which the treatment is based, and shows the defects and disadvantages of previous modes of treatment. Of the recorded cases, 74 are from America, 33 from Britain, 21 from Germany, 12 from Sweden and Norway, 4 from France and Russia. Twenty-three cases ended fatally, but in some of these the operation had resulted in benefit to the patient. In 3 cases acute mania followed the castration, but Bruns questions whether this can fairly be attributed to the operation independently of such causes as uræmia, sepsis, or iodoform poisoning; all these cases are reported by the same surgeon. The benefit of unilateral castration Bruns regards as uncertain, and he gives preference to division of the vas deferens as being less mutilating than castration, and, so far as may be judged, equally effectual.

Dr Lauenstein (Hamburg) proposes to advance a step beyond previous operations, modifying Helferich's operation (division of the vas deferens), in the sense that he divides subcutaneously (*Centralblatt f. Chirurgie*, No. 7, 1896). Mr Reginald Harrison draws attention to the fact that it is not required to induce a complete atrophy of the enlarged prostate, but only such a slight alteration as may bring the gland into the state normally associated with old age, recalling the fact that comparatively few enlarged prostates ever give rise to symptoms. His observations as to the results of the treatment agree in the main with those stated above—frequent micturition ceases, the use of the catheter is discontinued or rendered easier, cystitis is relieved, and the state of the urine improved.

RESULT TO THE TESTIS OF LESIONS OF THE DIFFERENT STRUCTURES OF THE CORD.—Dr Roberto Alessandri studied experimentally the consequences of lesions to individual elements of the cord, and concludes:—(1), Ligature of the vas deferens determines eventually atrophy of testis and epididymis, inducing dilatation of the canals, fatty degeneration of their epithelium, and later a fibrous tissue formation; (2), ligature of the spermatic artery and veins induces atrophy of the testis more slowly if the artery of the vas deferens be spared; (3), ligature of artery or veins alone interferes with the nutrition of the testis, but does not lead to complete atrophy; (4), ligature of part of the venous plexus has no influence upon the testis; (5), excisions of the nerve filaments induces necrosis of the epithelium in the centre of the testis, and more slowly a similar change in the epididymis. After seventy-five days the gland is slightly diminished in size, but there is no complete atrophy; this is contrary to the observations of Przewalski (*Central. f. Chirurgie*, No. 1, 1896).—*Annales des Maladies des Organes Génito-Urinaires*, January 1896; from *Il Policlinico*, May 1, 1895.

EXPERIMENTAL RESEARCHES ON IMPLANTATION OF THE URETERS UPON THE BOWEL BY MEANS OF A BUTTON.—Dr Boari (Ferrara) believes that implantation of the ureters upon the bowel is a rational operation in proper circumstances. The main source of possible failure is stricture of the artificial opening and septic infection of the kidney. Dr Boari regards the latter consequence as probably following upon hydronephrosis induced by defect in the result of operation. When the canal is free, he maintains that the downward flow of urine will prevent passage of microbes up the ureters. It is of importance to determine, therefore, the best and simplest mode of grafting which will secure a patent orifice with a minimum of fibrous tissue formation. With this idea Dr Boari had a button made to replace suturing, which button should be expelled per anum when it has fulfilled its function. The anatomical specimens he has obtained showed a satisfactory result, but he has only twice made use clinically of his method. One patient with advanced tuberculosis of the bladder died thirty-five days later; the other, who suffered from vesico-vaginal fistula with destruction of the urethra, still lives (six months after), and passes water partly by the anus, partly from the vagina, every three or four hours without inconvenience. The operative procedure adopted was by a curved incision in the left groin from the middle of Poupart's ligament to the anterior superior iliac spine. The peritoneum was raised forwards and the ureters exposed. The posterior parietal peritoneum was incised, and a loop of colon drawn out with which the anastomosis was made, the peritoneal cavity being shut off by suture. The expulsion of the button took place on the tenth and twelfth day, but Dr Boari has modified the button to obtain a slower loosening of its hold, with a view to greater security against leakage. To implant both ureters at one operation he thinks dangerous, from the tendency to uræmia during the first few hours. The anastomosis may be made either with the rectum or the colon, by abdominal, lumbar, or sacral incision. In one experiment to obtain a valvular arrangement the ureter was implanted just above the ilio-cæcal valve, and the fæcal stream was diverted from that part of the bowel by lateral anastomosis between the bowel above and the colon. The button consists of two halves, one sliding upon a stem to which the other is fixed. The two are held *apart* by the action of a spring. The stem is chosen of suitable size, and placed in the ureter, which is held to it by a silk ligature; the two halves of the button are apposed, and held so by a steel pin passing through a hole in the stem, the spring thus being compressed. The button is introduced through an incision into the bowel, and a purse string surrounding the opening is tightened; while the suture is held tight the steel pin is withdrawn, and the spring thus set free forces apart the two plates, and so the button is fixed, a second knot then being tied. In later experiments an effort was made to conserve the natural ureteric orifice, by implanting the surrounding circle of bladder wall, or even the trigone, with both ureteric openings. The button can also be used to get a lateral anastomosis, and so a larger opening less liable to stenosis.—*Ibid.*

PERISCOPE OF SYPHILIS AND GENITO-URINARY DISEASES.

By Francis Cadell, F.R.C.S. Ed.

Historical Sketch of the Etiology of Chancroids.—The three books which represent the prevailing ideas on the cause of chancroids are, first, *A Treatise on the Venereal Disease*, by John Hunter (written in 1786); second, Ricord's *Traité Practique des Maladies Vénérieusses*, Paris, 1838; third, *Venereal Diseases*, by Robert W. Taylor, 1895. The opinion that blenorrhœa, syphilis, and chancroid were caused by one poison was maintained for two centuries. During Hunter's lifetime the identity of syphilis and gonorrhœa was denied most vigorously by Benjamin Bell, but it remained for Ricord to prove conclusively the difference between these two widely differing diseases. The difference between chancre and chancroid does not seem to have been entirely clear to Ricord, and to Bassereau, his disciple, is due the credit of the sharp distinction between the local septic ulcer and the primary lesion of syphilis. After Bassereau, Rollet of Lyons established the theory of a specific virus for chancroid, and laid the foundation for the so-called dualists as opposed to the unicists, who still maintain that the hard sore and the soft were each under certain conditions capable of producing syphilis. A blow was given to the dualists when it was found that the secretion from an irritated chancre, when inoculated, produced a typical chancroid. They, however, called this form of sore a mixed chancre in which the lesion combined the poisons of both diseases. It is known that a syphilitic lesion treated with absolute surgical cleanliness will not produce pus, but only serum, and this latter will not produce chancroid by inoculation on their bearers. On non-syphilitics such inoculations will produce syphilis. If by sepsis pus is produced on a chancre, that pus is produced by the ordinary pyogenic microbes, has been added to the original chancre, and is not a part of it. Any chancre, when irritated, will secrete a pus which may safely be inoculated upon a non-syphilitic with the production of a typical chancroid, which in turn can be inoculated through several generations. To Taylor's mind this is one of the proofs that chancroid has no special specific virus, and may originate *de novo.*

The following case of Danielssen's mentioned by Taylor (page 25) will serve as a clinical illustration: "A man, aged 30, free from syphilis, was inoculated 393 times with pus derived from irritated hard chancres and was not rendered syphilitic. Later on he was inoculated directly with the natural secretion of a hard chancre, and became the victim of syphilis." Taylor concludes that there is no special specific virus for chancroid, but it is derived from pyogenic microbes, which, of various kinds, are always to be found in the secretions. The author and his assistant, Dr Brent Palmer, are at present engaged in some inoculation experiments which he hopes will throw further light on this subject.—Dr J. N. Bloom, *The American Practitioner and News,* January 11, 1896.

Gonorrhœa in the Female.—Gonorrhœa in women, as in men, consists of an exudative inflammation of the submucous connective tissue, and the genital organs of women are so extensive, complex, and involuted, and so profusely supplied by bloodvessels, which frequently undergo normal engorgement, that it can readily be understood why the morbid process may show a tendency to become chronic and lurk and hide. There has been a proneness developed, within the past ten years, to refer, in a loose and unscientific manner, all female ailments to gonorrhœa, and attribute to many husbands, who in early days had been indiscreet, a gonorrhœal infection of their wives, which produces serious consequences. The extreme and exaggerated views of Noeggerath, who claimed that 800 out of every 1000 men living in large cities suffer from gonorrhœa which they have never recovered from, and who, on marrying, sooner or later infect their wives, have done much to perpetuate these ideas. There is a tendency nowadays to harp upon the longevity of the gonococcus, its phœnix-like power of resuscitation, and its relentless virulence. This idea, put forth by some syphilographers, has had undue weight with many gynæcologists, who, under its influence, are led to think that the gonococcus in the male and female never dies, and is ever ready to produce pelvic mischief. I have seen many young women who have suffered from uterine and pelvic disease after marriage, whose trouble was induced by instrumental manipulation at the hands of energetic young men possessed of an ambition to be known as gynæcologists. Minor surgery is certainly the cause of a great many cases of uterine and pelvic disease. In estimating the importance of gonorrhœal infection as a cause of female trouble, we must individualize rather than generalize.—R. W. Taylor, in *Charlotte Medical Journal.*

Part Fifth.

MEDICAL NEWS.

Royal College of Surgeons, Edinburgh.—The following gentlemen having passed the requisite Examination, have been elected Fellows of the College:—George Bidie, L.R.C.S.E., Surgeon-Captain, Indian Medical Service; Alexander Cook, L.F.P. & S.G., Medical Inspector of Seamen for the Board of Trade, Cardiff; Henry Porter D'Arcy Benson, M.B. C.M., Univ. Edin.; George Hardyman, M.B. C.M., Univ. Edin.; Reginald Hartley, L.R.C.S.E., Surgeon to Lambart Memorial Hospital; and Thomas Henry Pope, M.B. C.M., Univ. Edin., Surgeon-Major, I.M.S.

Royal College of Physicians of Edinburgh, Royal College of Surgeons of Edinburgh and Faculty of Physicians and Surgeons of Glasgow.—The Quarterly Examinations for the Triple Qualification in Edinburgh took place in April, with the following results:—

First Examination.—Four Years' Course.—Of 16 Candidates entered the following 8 passed the Examination:—Frederick Lilley, Louise Blanche Smith, William Joseph O'Farrell, James Dodwell Richey, Wesley John Jenner, Walter Latham, William Edward Wallen Strickland, and John Earnest Broadbent; and 3 passed in Elementary Anatomy, 1 in Histology, and 1 in Chemistry.

First Examination.—Five Years' Course.—Of 39 Candidates entered, the following 14 passed the Examination:—Wm. Thos. Finlayson, Wm. Hendry Eden Brand, Wm. Lock, Jas. Alexander Chisholm, William Mitchell Browne, Harold Emery Jones (with distinction); William Maxwell Mather, Francis Wilfred Harlin, Alice Muriel M'Farlane, Charles Stephenson Oliver, Francis Edward Woodroffe, Robert M'Laren, Roger Shotton Milburn, and Francis Peake Maitland; and 2 passed in Physics, 3 in Biology, and 9 in Chemistry.

Second Examination.—Four Years' Course.—Of 18 Candidates the following 7 passed the Examination:—John Harris, Frederick Ernest Shawe, Joseph Stanislaus Gubbins, Theodore Alexander William Ogg, Joseph Kennish, John Critchly Pemberton, and Frank Parr Moncton; and 1 passed in Anatomy and 3 in Materia Medica.

Second Examination.—Five Years' Course.—Of 16 Candidates the following 11 passed the Examination:—Patrick Coffey, Henry James Clarke (with distinction); Cecil Charles Murison, George William Hardie (with distinction); Michael Sullivan, Frederick Patrick Walsh, John Arnold Petavel, Edith Neild (with distinction); Hermann Aspinall, John Herbert Gibbs, and Katharine Constance Sampson; and 2 passed in Elementary Anatomy.

Third Examination.—Five Years' Course.—Of 15 Candidates the following 6 passed the Examination:—Richard James Isaac, Gilbert Jamieson Meikle, William Laidlaw Cribbes, Montague Rust, Edith Mary Paton, and Marcus Hill Babington; and 2 passed in Anatomy, 2 in Pathology, and 1 in Materia Medica.

Final Examination.—Of 105 Candidates entered, the following 42 passed the Examination and were admitted L.R.C.P.E., L.R.C.S.E., and L.F.P. & S.G.:—Frederick George Haywood, Birmingham; Frederick Herbert Perry, Waddington; Matthew Caldwell, Castlederg; John Bernard Voortman, South Africa; Frederick Victor Elkington, Fenny Compton; Heinrich Otto Kellner, Bloemfontein; James Wilson M'Brearty, New Zealand; William Chapman, Manchester; John Stott, Haslingden; Gustave Lewis, Warsaw; Hubert Hope Thomas, Swansea; George Broadbent, Horsforth; Edward Bernard Levy, Melbourne; Corelli Collard Field, Cobourg; Krishnaji Amnaji Dodil alkar, Bombay; Herbert Maunsell Hewlett, Melbourne (with honours); James Jeffares, Wexford; Frank Wiseman Doak, Sydney; Alfred Whitehead, Burnley; George Patrick O'Connor, Cambridge; Allan Forde, Cork; Cecil Ridge Batchellor, Staffs.; John Simeon Colebrook Elkington, Victoria; Reginald Bryson, Poona; Edward Robertson, Benalla; Samuel Nicholson, Partick; Ardashir Sorabsha Paymaster, Ahmedabad; William Henry Drury, Manchester; Stanley Foster, Isle of Wight; James George Mackay, Inverness; John James Sylvester Healy, Australia; Robert Smyth, South Australia (with honours); Edward Blyth Hurst Hughes, Willington-on-Tyne; Arthur Holmes Field, Baildon; Thomas George Stanton Crouch, New Zealand; William Gladstone-Cook, Gateshead-on-Tyne; Kaval Vittal Ras, Mangalore; Charles Edward Proctor, Birkenhead; Edmund Joseph Cummins, Essex; John Newcombe Coul, Cornwall; George Percival Searle, Devonshire; and George Grant Stewart, Bristol; and 10 passed in Medicine and Therapeutics, 1 in Surgery and Surgical Anatomy, and 5 in Midwifery and Medical Jurisprudence.

Litmus Pencil.—We have received from Messrs Thomas Christy & Co., Lime Street, London, a specimen of their new Litmus Pencil. It is constructed of chemically pure blue and red litmus inserted at either end of an ordinary wooden pencil. It is sharpened like an ordinary pencil, the end is dampened and a mark made on a slip of white paper, which is to be inserted into the specimen to be tested. Blue changes to red with acid, and red to blue with alkali, and it is stated that 1–100,000 can be thus detected. It seems a simple and useful weapon.

CORRESPONDENCE.

(*To the Editor of the Edinburgh Medical Journal.*)

EDINBURGH, *May* 21, 1896.

SIR,—I hope you will allow me to add a few references to the paper on "Digestion of Starch in the Stomach," which appeared in the last number of your Journal, for the benefit of your readers and the edification of the author.

Chittenden and Ely (*Journal of Physiology*, vol. iii., and in the *American Chem. Journal*, vol. iii. p. 305) assert that hydrochloric acid added to saliva in the proportion of 0·05 per cent. rather increase its amylolytic action, a proposition also affirmed by Astachewsky (*Centralbl. f. med. Wissenschaft*, 1878).

Langley, on the other hand, gives (*Journ. of Physiol.*, iii. p. 246) ·005 as the maximum percentage of the acid in which ptyalin can remain active, finding later (*Ibid.*, iv. p. 18) that its action is distinctly diminished by so dilute a solution as 0·0015 per cent.

It should be remembered that the acid was added in Langley's experiments until the acidity of the mixture when titrated gave the above percentages, for the first portion of the acid added goes to neutralise the saliva. Indeed, Langley found that saliva exactly neutralised is more potent than when either alkaline or acid in reaction, corroborating thereby Chittenden's first observation, in which no doubt the saliva had just been neutralised.

With reference to the section commencing on page 1011, the author might with advantage study some work done between twenty and thirty years ago by Cohnheim, Defresne, and Roberts, who performed very similar experiments, the results of which have been checked more recently by Chittenden and Langley.

With reference to the diminished action of hydrochloric acid, when combined with proteid bodies, on ptyalin, notices of this subject will be found in Gamgee's *Physiological Chemistry*, in two papers of my own (*Edin. Med. Journ.*, 1893, and *Journal of Anat. and Physiol.*, vol. xxvii.), and by various authors in other places.

The last sentence in the paper might surely have been qualified so as to show that the opinion, to which the author has been led by his experiments, corroborates the work of others, and is, therefore, valuable as corroborative evidence, not as the outcome of original observation.

I do not wish to call in question any of the details of the paper, which are of a valuable and interesting character, merely to point out the omissions noted, and to call attention to the, now too frequent, habit of ignoring previous publications.—I am, Sir, yours faithfully,

A. LOCKHART GILLESPIE, M.D.

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